THE FARMERS' REGISTER.

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EDMUND RUFFIN, EDITOR AND PROPRIETOR.

STEAM PLOUGH.

From the Albany Cultivator.

We find the following in the "Planter's Banner," a paper printed at Franklin, La. We cannot doubt that eventually the obstacles that have yet prevented the success of the steam plough will be overcome, and the cultivation of our rich and vast prairies effected mainly by its use. The grand difficulty so far has been, not to create the power, but to make power effective. When required to drag a great weight, it is found that the wheels of the engine will frequently slide on their circumference; this is sometimes seen on railroads. If Mr. Larkin has devised a way to *make the wheel stick*, the ploughs will follow as a matter of course. The failures in England and Scotland, have arisen from this source; and it has occurred to us while reading accounts of their experiments, that strong spikes of proper lengths on the outer surface of the engine wheels, by penetrating the earth, would secure their advance, when in motion.

"We had the pleasure," says the editor of the Banner, "at the recent election in this parish, of seeing Mr. Larkin's model of a steam plough in operation. There are two engines which are attached to a square frame, with a boiler between them. Each engine is attached to the draining wheels, which are set in motion something after the manner in which the paddle wheels of a steamboat are caused to turn. In front there are two guiding wheels, which are easily turned by means of a draw wheel. The ploughs are attached to the rear of the machine. This locomotive was set in motion by Mr. Larkin, in the presence of a large number of persons, and various opinions were expressed as to its probable success. We heard several intelligent planters say they were confident Mr. Larkin's invention would answer all his expectations. In the experiments that have hitherto been made in ploughing by steam, the great difficulty has been to find a fulcrum on which the power of the machine might act. The resistance of the ploughs in the earth has been found so great, that although the power was in the machine, still it had not a sufficient *prop* or *fulcrum* to act upon. Mr. Larkin has taken this difficulty into consideration, and he says he can overcome it. We sincerely trust he may."

POULTRY INQUIRIES.

From the Albany Cultivator.

An "Inquirer" has submitted to us a variety of queries in relation to poultry; the nature of which will be sufficiently indicated by the replies, without occupying a column by their insertion.

1. As to buildings, it matters not how cheap and simple the poultry house may be, if it is made to combine the qualities of security from vermin, ventilation in summer, and indeed at all times; and warmth in winter. We would not advise any farmer who does not intend to make the rearing of poultry an important part of his farm business, to make any expensive structures for their use.

2. Hens should not lay near those that are setting, or with them, as trouble will most assuredly ensue. If two hens wish to set together, shut one of them up for a few days and there will be no difficulty.

3. Boxes for hens to lay, or set in, are best when placed around the lower part or floor of the building, rather than in tiers above each other, as they will be less likely to interfere with each other. The front part of the boxes should be partially closed, as fowls on their nests dislike notice.

4. Hens might escape small vermin by having their nests on the ground, but eggs will rarely hatch well in that position. Straw or hay should form the nest.

5. The best preventive of vermin we have ever known, is a box of sand and ashes for them to dust themselves in at all seasons. We have never known fowls injured by vermin, that had access to such boxes; and if provided with these, and limestone gravel, they will be rarely troubled with the gapes. We have kept poultry for thirty years, and have never, to our knowledge, lost a fowl from this disease. We have little doubt, that where the premises occupied by poultry are once infested with vermin, removal will be useful; or a thorough cleansing and white-washing may be adopted.

9. We know of no way of preventing hens from laying where they please, unless by confining them to their houses or yards. An egg placed in a nest will frequently attract them to that spot, but not always. Fowls will, however, always do better with the same feeding, to run at large at all seasons, the coldest weather excepted, than if confined to houses or yards.

7. The Malay and the Molucca are the same, or with very slight variations. The Dorking, originated in Surry, England, is pure white, and is distinguished from all other varieties by having five toes on each foot. The Game breed of fowls is slender in form, and their eggs small, but their flesh is superior to all other kinds in richness and delicacy. Their pugnacious disposition is the great objection to this breed.

8. Breeding in and in affects fowls, as it does other animals, very injuriously; and a change of cocks occasionally, or as often as every second year, is necessary.

9. With the breeds of fowls commonly reared in Virginia, we are unacquainted, and know not whether the Dorking or Poland breeds exist there in purity or otherwise.

10. Eggs may be kept for a long time in salt; but eggs intended for setting, should always be as new as possible; keeping them in any method injures them for this purpose. Neither corn meal, bran, or sand, will preserve eggs as well as salt. Salt prevents that increase or variation of temperature that all these allow. Protection from atmospheric change, and a low temperature, are requisite for the keeping of eggs; and where salt

is used, a few inches of this material is all the covering necessary.

11. Sulphur is one of the best substances for freeing all animals from vermin, by feeding it to them occasionally. Although we have never known the slightest injury result from its use, excessive quantities might possibly prove hurtful, and they are certainly useless.

12. The common duck or mallard is the only variety that can be profitably reared, as all others appear less hardy, require more care, and being wilder, are more disposed to make their escape. We are not aware that the wild turkey has ever been crossed with the domestic one, or that a successful attempt has been made to domesticate them. Such attempts appear to be scorned equally by the wild turkey and the partridge.

ANOTHER HUMBUG EXPLODED.

From the Albany Cultivator.

From the English agricultural journals we perceive that much attention has been excited in the agricultural community of that country, by the introduction of a new clover, called the Bokhara clover, famous for its rapid growth, and the great amount of green food a small quantity of land sown with the seeds would produce. Quite a handsome speculation was going on in the seeds, when some specimens fell under the notice of the naturalist, Dr. Smith, who pronounced the plant to be the *Melilot alba*, or white Siberian melilot, commonly known as Buffalo or *sweet clover*, but in reality no clover at all. This plant had long been cultivated in gardens, and to some extent had been introduced into field culture on the continent; but the benefits expected from its use have not been realized. In a memoir read before the French Agricultural Society, in 1788, by M. Thouin, it was strongly recommended, but on a large scale was not found to equal representations made from garden culture. It was found in France to bear four cuttings in a year; but if not cut while young, the stems became woody and of little value.

This Bokhara clover, or melilot, was introduced into Pennsylvania, some two years since, and the fortunate possessors of the plant were driving a lucrative business in selling the seeds at the rate of one dollar a hundred, when its identity with *sweet clover* was detected by a lady, and the bubble of course has burst in this country as well as in Europe. A letter from Mr. Hepburn, in the August Agriculturist, details the process of identification.

We have frequently cautioned our farmers against indulging in extravagant or costly speculations in new things, or things that are called so. The caution to "prove all things and hold fast that which is good." is as applicable in agriculture, as in theology. The melilot is a valuable plant for some purposes, but it will not equal the representations made of it as a forage plant. It is not a clover, and the plant is not a new one; and if any, with a knowledge of these facts, have disposed of the seeds as such, they have practised a gross deception or imposition. Melilot is the plant used to give the peculiar flavor and appearance to the celebrated Schabzieger cheese of Switzerland, and the Guyere cheese of France. The green plant is ground in a mill and mixed with the curd into a kind of paste, which is put into conical moulds to be dried and cured. Some farmers in Europe are in the habit of mixing it in small quantities with their hay. Its powerful aromatic smell imparts to the hay an agreeable flavor, which is evidently agreeable to animals. But as most of our readers have cultivated it in their gardens as sweet clover, there is no necessity of enlarging on its properties.

REPORT TO THE STATE BOARD OF AGRICULTURE.

ON THE FARMING OF ROCKBRIDGE COUNTY.

White Hall, June 21, 1842.

Edmund Ruffin, esq.—Sir—The letter which you did me the honor of addressing, as Corresponding Secretary of the Board of Agriculture, came to hand yesterday. I promptly respond to your call, so far as my limited information will serve. Being a farmer of only some eight years' standing, the greater part of which time has been spent in erecting suitable buildings to make farming pleasant, I have not been enabled to give that attention to the improvement of my farm which it so greatly needed; the former proprietor having been fairly starved off, sought a home in the far west, leaving the premises in a galled condition, without a good building, save the body of a barn. The consequence was, when I purchased in 1834, I had to build a good farm house, negro-houses, stabling, shed my barn, put up meat-house, dairy and hog-house, together with saw-mill, grist-mill and oil-mill, and plant out some 300 trees of select fruit. Thus, you will see, with a limited force and not a large capital, I have had much to attend to, without being enabled to give much time to the improvement of my land. I have not, however, been unobservant as to the general management of my neighbors, and with the additional light diffused from your excellent Register, the Albany Cultivator, and the Southern Planter, I flatter myself I have derived much useful information; and I hope, should my life be spared a few years longer, to let my neighbors see that a free use of lime, with deep ploughing, and a proper rotation of crops, will in the end not only yield a very comfortable living for my family, but will be a source of revenue.

The general average of the wheat crop in the county of Rockbridge will be about 10 to 12 bushels. Many good farmers make 20, 25 and 30 bushels to the acre; Major John Alexander, in the year 1839, had a few acres that reached as high as 40 or 42 bushels per acre, agreeably to his report to the Rockbridge Agricultural Society. This crop is, however, rarely obtained, and I might safely put down the average of our best farms at something like 20 bushels. My own crop for several years did not average more than 5 bushels. Last year I took much more pains in preparing my ground; after fallowing, hauled on lime at the rate of about 40 bushels per acre, tongued in my wheat, after rolling heavily in lime, say 1 bushel of lime to three of wheat. The crop looks remarkably well, and good farmers say I will have at least 20 bushels per acre. The

straw is beautiful and bright, and I shall commence cutting about the 24th instant. Where I did not lime the land, and only rolled in lime, the crop will not exceed 10 bushels per acre.

The use of lime is not generally resorted to in our county. Col. T. A. Barclay, John Ruff, esq., Th. Willson, and a few others, are all that use it, and generally but sparingly, notwithstanding it could be made at a cost not much exceeding 6 cents per bushel in many parts of our county. Our farms, averaging from 200 to 300 acres, have all more or less waste timber, which is left to rot in the woods, that might be usefully applied in burning lime. Limestone abounds in all parts of our county; scarcely a farm that is destitute of it, and in many places it can be collected in great abundance on the top of the ground. I flatter myself the day is not far distant when it will be extensively used. My poor fields begin to attract the attention of many persons, and it gives me much pleasure to impart any information on the subject of liming of which I am possessed. With regard to the corn crop, the system of cultivation is pretty much the same all over the county. The land is generally broken up in the spring, in most cases not as deep as it should be, notwithstanding we have fine large horses and good ploughs. Still the impression is, that 3 or 4 inches is deep enough. Where the land is level, and not subject to wash, it is checked both ways, ge..erally 3 by 4 feet, 3 or 4 grains in the hill, thinned to 2 or 3 in good land. On good land, planted in this way, 40, 50, 60, and as high as 75 bushels have been housed per acre. The general average I would set down on good land at 50 bushels per acre, medium at 30, and thin lands, generally badly worked, at 12 or 15 bushels. Oats is becoming a much more common crop than it was some years ago, and is found very convenient for quick feeding. Also mixed and ground with corn, half and half, it makes an excellent feed for work horses, and answers in place of rye, being mixed either with cut straw or hay. This crop in our valley is usually sown in March, and, like the corn crop, varies from 10 to 75 bushels per acre, agreeable to the quality of the land and mode of cultivation. Rye has not for several years done well with us, has been subject to rust and blight. This year the crop will be better than the usual average; the straw clean, and yield will be from 8 to 15 bushels per acre. This is a valuable grain for horse feed, and the straw, when bright, is very abundant and excellent for cutting short, and mixing with chopped rye, corn, oats, or any good meal. It is also a valuable crop for early pasture for colts and calves, and milch cattle, during an open winter. This crop is generally sown with us in the month of August, or first of September.

One dollar per bushel for wheat is perhaps rather over an average price; corn usually commands 50 cents per bushel, rye 62 to 75 cents, oats 25 to 42 cents, rarely reaching the latter price.

Irish potatoes generally cultivated for family use, and some farmers make them for their cows and hogs. Roots not extensively cultivated.

I would briefly remark, that the mercury for the last six years has not often fallen below zero, and when below, only for a few days. In summer it rises sometimes as high as 98 degrees. The general range in the heat of the day, for the months of June, July and August, is from 70 to 85 degrees. I have in cultivation the apricot, nectarine, prune, plum, peach of many varieties, different varieties of grape, with a fine young orchard of select fruit, (apple,) all of which bear well, with the exception of the apricot. Our spring months are too cold, and the fruit is generally knotty. The different varieties of cherries do well. I have also raised the melon to great perfection; they are, however, late in maturing. You have some advantage over us in winter with regard to climate, being of more uniform temperature. We are more liable to sudden changes at all seasons. I have known the mercury vary 50 degrees in 24 hours. This rarely or never happens with you. We have perhaps the finest watered country in the world— bubbling springs and rippling streams are to be met with in almost every direction. And notwithstanding our county is very rolling, and stony, and no where spread out into extensive meadow lands, yet almost every farm has its little piece of meadow, which is not unfrequently watered from the spring. Most of our meadows are watered, and where the supply of water is abundant, the land and grass are proportionably good. Consequently we abound in cattle, horses, sheep, &c. Cattle and horses are more generally raised than sheep or hogs. Of the two latter not a great number are sent to market. I would however remark, before leaving the subject of meadows, that good grass usually yields about 2 tons per acre, and is sold from the meadow at from $5 to $6 per load of 1 ton; after being housed will command $7 to $10 per ton, owing to the supply. I might also remark, with regard to our grain crops, they are nearly always housed, and the grain got out during the winter months. There will perhaps be some change with regard to the latter practice, as we have now many good thrashing machines; no doubt much grain will be got out from the field, and particularly this year, as we are, in general with the people of our good old commonwealth, a good deal in debt. And now for the meadows, again. Grass, when much mixed with clover, is often cut in June, is permitted to wilt in the swarth, and if the weather is very favorable, put in cock on the second day; if to be put in large bulk, should remain in cock several days. Should then be opened, suffered to get well aired, and may be put away in any quantity. One peck of salt sprinkled on each load of 1 ton will add to its preservation, and the cattle or horses will eat it with great relish. A good hand will mow an acre of heavy grass per day, if not too much tangled.

With regard to dairy management, there has been so much written and said, that I despair of adding any thing to the stock of knowledge on that subject. I can truly say that, under Mrs. Jones' management, we have butter as sweet as a nut, and in the fall as yellow as gold, and that her butter was thought worthy of a premium at our last agricultural fair. As her course is simple, and easily put in practice, I will briefly state it. First, have good cows that milk rich; second, have good grass and good water and shade in your fields. May and June, on blue grass, are excellent months for butter; but September and October, when the cows are turned in on the meadows, I think best, the nights being longer and the weather more cool. Have a good spring house, and plenty of pans or crocks; let every thing be kept perfectly clean, and the crocks or pans al-

ways scalded when emptied, and put on a shelf to be well aired and kept sweet. Churn the cream with what are termed strippings, the last milk taken from the cow, from half a pint to a pint; put no hot water in the churn, but churn the cream and strippings till the butter appears. Separate it from the milk, and wash the butter in pure clean spring water, till the water (being frequently changed) is perfectly clear. The butter should be washed with a small wooden ladle, and not cut with the edge of the ladle, but thoroughly worked and pressed until all the milk is out, and the butter looks smooth. You may now salt to suit the palate, of good, dry, fine salt. Some persons work it a second time, but we have never found this necessary, if the duty is properly performed at first.

And now, my dear sir, I have scribbled you two sheets without any order; if you should think what I have written worth any thing, make such use of it as you like. I would be glad to render any aid in my power to the agricultural community of our state, and if my ability was equal to my will, I would make every part of the Old Dominion to bloom and blossom as the rose. Should you publish any of my remarks, please put them in proper order, and correct blunders. I had intended saying something on the subject of our fencing, but have not space except for a word. The fences of our valley are generally the worm, stake and ridered fence, with now and then a fence of three foot worm, with locust or cedar posts and caps. There is no post worth putting in the ground except cedar, mulberry or locust. These well set with chestnut rails make an excellent fence, which will last many years. Yours, &c.

HENRY B. JONES.

ARTIFICIAL MANURES.

From the Albany Cultivator.

The preparation and use of manures constitutes one of the points in which the advance of modern agriculture is most apparent. For this advance, we are indebted to the application of chemical science to an investigation of the substances most commonly used to promote the growth of plants. An imitation of the operations of nature has thus been effected, in which there has been a decided improvement on the original, as the change necessary to convert organic matter into the fertilizing material is effected in a very short time; the bulk diminished while the efficiency is increased; and the disgusting, offensive character belonging to some of the original compounds entirely done away. Substances, too, once wasted, or rather considered of no value, are now in the course of a few weeks converted into manures of the first quality. Every discovery of this kind is of importance to the agriculturist; for although some of them it is probable will not be made useful on a large scale, and some of the preparations cannot become common in this country; still there are many which we are confident will be extensively used every where; and the better they are known, the more highly appreciated by the farmer or gardener.

Poudrette, or prepared night soil, is one of the most valuable of these prepared manures, concentrating in a great degree the elements of fertility; and as prepared, being easily portable, used with facility, perfectly inoffensive, and very powerful in its action. The two most extensive manufactories of this article are the New-York Poudrette Company—D. K. Minor, agent, New-York city; and the Lodi Poudrette Company, at Hackensack, New-Jersey—A. Dey, New-York city, agent. We are pleased to learn that the demand for the products of these manufactories is constantly increasing, and the proofs of the value of the manure so made rapidly accumulating. The value of poudrette, compared with good stable or barn yard manure, is estimated as one of the former to from 12 to 15 of the latter; and some have even estimated the difference as still greater. When we remember that this manufacture is designed to convert what has always been a nuisance and source of multiplied diseases in our cities into a means of fertility and wealth, its importance will be duly estimated.

Another preparation, which is receiving some favor, is that produced by Bommer's patent, in which all ligneous or woody plants, such as straw, cornstalks, weeds, roots, sea grass, and in fact all vegetable matters, are converted into manure in a much shorter period than by the usual course of decomposition. It is pronounced as efficient as stable manure, more lasting, and costing but little. The process of preparing this manure has nothing difficult about it, and is said to be easily and expeditiously performed. It is probable the patent will for a time, even were its value unquestioned, prevent the extensive use which this mode of preparing vegetable matter might otherwise have obtained. Of the peculiar forms of the process we know nothing; but the testimony in its favor from those who have tried it, appears ample. Patent manures, patent implements, and patent medicines, are very apt, however, by practical farmers, to be placed in the same category.

The English agricultural journals have within the past year frequently alluded to the qualities of a new fertilizing preparation called Daniel's patent manure. The specifications of the patent have been received in this country; and though evidently intended to mystify, rather than disclose the real process of making the manure, it is easy to see that a powerful manure must be the result of the combination. According to the specification, the materials of the manure are divided into three classes. First: ligneous matters, peat, straw, weeds, &c. Second: bituminous matters; such as mineral coal (bituminous doubtless) asphaltum, pitch made from coal tar, or other pitch, mineral rosin, and also tar. Third: animal matter; such as butcher's offal, graves, flesh of dead animals, also fish.

The ligneous matters are reduced to powder by grinding, or by the action of caustic lime. The bituminous matters are also ground into powder; if sticky like pitch, a small quantity of dry quick lime is added to prevent adhesion to the machine; if liquid, they are converted into vapor by dry distillation, in which vapor the ligneous materials are saturated; or if preferred, the soft bituminous matters are dissolved in water, to which caustic alkali has been added, and in this the ligneous matters are steeped. The animal matters are mixed with the ligneous and bituminous ones, and then the whole reduced to a powder.

Such a preparation cannot fail to be a fertilizer

of the most powerful kind, though it is evident the process needs much simplification before it can be adapted to the use of farmers generally.

Guano is probably the most powerful natural manure known; and the artificial one that shall most nearly resemble that, will doubtless be the most valuable. Voelckel's analysis, the latest and best of this substance, as given by Dr. Dana in his Muck Manual, shows that it contains in the various salts of ammonia 32 parts in 100, sulphates of potash, and soda 9 parts, phosphate of lime 14 parts, soluble geine or humus 12 parts, and insoluble u determined organic matter 20 parts. The artificial manures are valuable in proportion as they furnish the materials for the ammonia, phosphates, and sulphates, which abound in guano. It is likely, indeed certain, that the immense masses of guano existing on the islands of the Pacific, are in a very different chemical condition from what they were when first deposited by the sea fowl that frequent those coasts and islands; consequently, in no fresh manures, in any country, can we expect to find the same combination of fertilizing substances as in guano. In no other country could such masses have remained without the wasting or dissipation of their most valuable parts, or their entire substance; the nearly total absence of rain in the guano region preventing such a result. The guano is therefore not only the result of the accumulation, but the chemical combinations of ages, and what agriculture requires of science, is the discovery of the means of effecting in a short time what nature has been centuries in performing.

In all preparations of artificial manures two conditions are requisite; first, value as a fertilizer; and second, facility and simplicity of preparation. Without the first, the labor of manufacture is lost; without the second, few farmers will be able to avail themselves of the benefits such manures offer. Thus far, we are inclined to the belief that of all the artificial manures, poudrette best fulfils these two conditions; but it by no means follows that other combinations may not be discovered, equally simple, and more powerful. Of one thing we may be assured; all such preparations, when brought within his reach and his means, will be hailed by the farmer with pleasure.

ANSWERS TO QUERIES OF THE BOARD OF AGRICULTURE.

WITH REFERENCE TO PART OF NANSEMOND COUNTY.

Chuckatuck, Nansemond county,
July 4th, 1842.

Edmund Ruffin, esq.—*Sir*—These imperfect answers to the Queries of the Board of Agriculture, I now forward to you, agreeably to your request, received some time since.

1. "*Geographical state?*" *Answer.*—This part of the county (the west side of the Nansemond river) may properly be termed level land, though near the river and creeks somewhat broken.

2*d*. "*Climate?*" About as Norfolk, being only about 30 miles distant.

3*d*. "*Surface and soil?*" Rather shallow a few miles off the river and creeks, from 2 to 4 inches; on or near the margin of the river and creeks, it will vary from 4 to 8 inches deep. Sand largely predominates.

4*th*. "*Minerals?*" None but marl; nearly every water course and ravine has a bountiful supply, and that of the very best quality—sometimes mixed with clay, but with sand most generally. Some of the beds are very full of large shells, others smaller; whilst a third class somewhat rembles meal bran, and when fully dry becomes white. The farmers in this section are rather cautious with the use of it; it is found to be a great promoter of the growth of wire grass, and also to have injured the corn crop. No doubt but the latter is entirely owing to their ignorance of its strength, and the proper quantity to be used. When judiciously applied, there can be no question of its value. Red and white clover both very fond of it.

5*th*. "*Water?*" Most of the creeks as well as the river are navigable for small vessels drawing from 3 to 7 feet water. Water salt. Fish, oysters and crabs can be had at almost any time.

II.—"*General management of land.*" 1*st*. "*Quantity of arable land?*" The farms vary in size, say from 50 to 400 acres of open land; of meadow none, except the marshes and bottom lands on the river and creeks. Of wood generally very plenty; waste land some.

2*d*. "*Size of farms?*" As it is the practice in this neighborhood to cultivate say from a third to a half of all the open land every year, of course the farm for the year will vary from 25 to 200 acres in corn—the balance in oats, clover, or at rest, but not pastured.

3*d*. "*Rotation of crops?*" Answered above.

4*th*. "*Depth and manner of ploughing?*" From 3 to 6 inches; done mostly with a single horse, and sometimes with a pair, or a pair of oxen. Mules not much in use with us, as wheat is not cultivated. The ploughing is commenced about the first of February.

5*th*. "*Tillage of crops?*" Oats being first, are usually sown on the last year's corn land, and [the seed] ploughed in. Some few persons first flush the land, then sow and harrow in; if clover is sown, they also roll, which finishes the work well. This work is usually done about the first of March. Land intended for the corn crop is fallowed, then checked off at various distances, the extremes each way 2½ by 5½ feet, then all the intermediate, according to fancy. Some few persons drill their corn. The above practices cannot be new to any farmer; nor can I say any thing relative to the after management that is new. On and near the water courses are cultivated, for sale, the Irish and sweet potatoes, water melons, onions, pumpkins, and a few other vegetables; also cherries, apples, pears and peaches, with some other small fruit, the greater part of which are sold to vessels that trade out of our waters to northern markets. The apple, water-melon and sweet potato trade is quite a large one.

III. "*Products and prices of crops.*" 1*st*. "*Usual product,*" *&c.?* Of corn, per acre, the average about 20 bushels, though some farms on the river will do better. Oats, I am not prepared to say what quantity, as they are mostly consumed on the farm. The general selling price of corn is hard to state: at present it is worth and sells at 60 cents per bushel; oats about 33 cents per bushel; blade fodder usually about $1 per 100

pounds; sweet potatoes, first digging, 60 to 62 cents for 62 pounds, which is the potato bushel. This early in September—later, less price, but never below 25 cents per 62 pounds. Water melons usually commence at $5 to $6 per 100; apples, the first, 50 cents per bushel, and never less than 20 cents. The black-eye pea is also a sale crop. They usually sell at from $1 to 1.25 per bushel. Other varieties mostly consumed on the farm. The farmers in this neighborhood are generally able to get the highest northern market price for all their grain, when it is in demand.

IV. "*Implements?*" We use mostly the Freeborn cast plough, for first ploughing. When the land is well broken, then the trowel or fluke hoe, and also a home-made cultivator, which does beautiful work when the land is in order to receive it.

V. "*Fencing and enclosing?*" The common worm fence is almost entirely used. Several farmers each have a cedar brush fence several hundred yards long, which is thought well of, after the following manner. First dig a ditch, 4 feet wide, 2 to 3 feet deep, carefully throwing all the dirt on one side, forming a ridge. Second, driving small posts or stakes in the bank, about 2 feet apart, leaving them 3 feet out of the ground. Third, then putting in the large brush of cedar, or any other lasting wood. Fourth, finish off with a binding; this I cannot describe well. The above fence, done well, is handsome, strong and durable; there is no blowing down, or stock breaking in.

VII. "*Grass and grazing.*" Answered in II. Also water, answered in II.

3*d*. "*Mowing and hay.*" Very little done.

4*th*. "*Artificial grasses.*" Red clover being the only one that is cultivated. Very little cut—being grazed off.

VIII. "*Live stock.*" 1*st*. "*Teams or laboring animals.*" Horses are mostly used; some mules and oxen.

2*d*. *Animals raised for sale or farm use?*" Oxen and a few horses; pork for home consumption, with a little for market. Also calves and lambs.

3*d*. "*Prevalent diseases, and their remedies?*" Inattention and starvation—remedies proposed, food and care.

IX. "*Dairy management?*" Very little.

XI. "*New or recent processes or improved practices in agriculture?*" Nothing to say, only a little more industry and management, which of late, I am confident, have taken root, and, I trust, in good soil and not stony.

XII. "*Obstacles to improvement, &c.?*" Nothing to say, only industry wanting.

XIII. "*Miscellaneous, &c.?*' Keep out of debt; strike hands with no man; stay at home; eat your own bread and meat, that which you make on your own estate; go not too often to either the hotel or the banks; be content with your lot or situation, be it never so homely; instruct your representatives to let agriculture and domestic affairs alone, and to make fewer and shorter speeches, and not talk so much about the "*dear people,*" and their rights, at the same time caring nothing about them, after having received their votes, &c. J. BUNCH.

STORING SMALL GRAIN.

From the Albany Cultivator.

You in the east, who have large barns and granaries, and convenient saw mills and lumber yards, cannot conceive the difficulty that you might encounter when settled on a new farm, in the west, forty miles from a saw mill. How would you store a few hundred, or a few thousand bushels of thrashed grain? Easy enough, if you only knew how—so could Careless have sealed his letter, if he had only known *how*. I will tell you how, and when you emigrate to the west, don't forget. Take fence rails and lay down a floor, a little from the ground, and build up the sides by notching straight rails, so they will be steady, and then take fine straw or hay, and tramp a layer smooth upon the floor, and caulk the cracks between the rails, and pour in the grain, and stack some straw over the top to keep out the rain, and your grain will keep better than in a close granary, and not waste a bushel in a hundred.

Buckwheat may be thrashed upon just such a rail pen, covered over with rails, much better than upon the ground; the grain falling through the rails into the pen below. SOLON ROBINSON.

EXPERIMENTS WITH MANURES.

From the Albany Cultivator.

The following details of experiments made on the lands of Knock, near Largs, in the spring and summer of 1841, by Mr. Wilson, were furnished to the Philosophical Society of Glasgow. A piece of three year old pasture, of uniform quality, of about 200 falls, old Scotch measure, was divided into ten equal lots, which, treated as follows, produced the undermentioned quantities of well made hay:

Lot.	Produce per lot, lbs.	Rate per acre, lbs.	Increase per acre, lbs.
1. Left untouched,	422	3360	
2. 2½ bbls. of Irish quick lime added,	602	4816	1456
3. 20 cwt. lime from gas works, -	651	5208	1848
4. 4½ cwt. wood charcoal powder -	665	5320	1960
5. 2 bushels of bone dust, - -	593	5544	2184
6. 18 lbs. of nitrate of potash, -	742	5936	2576
7. 20 lbs. of nitrate of soda, - -	784	6272	2912
8. 2½ bolls of soot,	819	6552	3192
9. 28 lbs. of sul. of ammonia, -	874	6776	3416
10. 100 gallons of ammoniacal liquor, from gas works at 5 degrees of Tweddle's hydrometer,	945	7560	4200

The value of the applications was 5*s*. for each lot, or at the rate of £2 per acre. All the articles were applied on the 15th of April, 1841, and the grass cut and made into hay in the following month of July.

IMPROVED AGRICULTURE.

At the late meeting at Bristol of the British Royal Agricultural Society, Mr. Smith of Deanston, the author as he may be called of the improved system of thorough draining and subsoil ploughing, was called upon to explain at large his views and practice in a public lecture. This was done without writing, and has been reported at large in the agricultural press. We have condensed it from the Mark Lane Express, but have taken care to omit nothing that is essential to a full understanding of the subject. It is full of important matter, and will be read by every intelligent farmer with the deepest interest. The results of this system are beneficial in the most extraordinary degree, and bid fair almost to revolutionize the husbandry of Great Britain. The results are not more extraordinary than they are profitable, as it appears from the most undoubted facts, that while under the old system, a Scotch acre of land in a lease of 18 years, would after paying all the expenses of cultivation and rent, leave a profit of only £5 14s. sterling, for the whole time, and at the same time the quality of the land become deteriorated; under the improved system, the land itself would be left in a highly ameliorating condition, and the actual profits for the same time, after expenses were paid, would be £64 14s. sterling.—*Ed N. G. F.*

LECTURE BY MR. SMITH, OF DEANSTON, ON DRAINAGE.

Delivered before the Members of the Royal Agricultural Society, in the theatre of the Philosophical Institution, Bristol, Wednesday, July 13, 1842.

From the Bristol Mercury.

After apologizing for the alteration of the time of lecturing, Mr. Smith proceeded:

The dryness of land is of great importance—in fact, the dry condition of the soil is the foundation of all good husbandry. It is beneficial to the working of the soil; to the after-growth of plants. There is scarcely any labor of agriculture which is not facilitated by the dryness of the soil. If we find a tree stronger than his neighbor, we shall find that there the soil is deep and in a dry condition. If we see a stronger and darker colored herbage growing on the hill side, there the soil will be found deep, and in a dry condition. There is not one of the various soils of the United Kingdom which will not be much improved by being placed in a dry condition, if they are not so by nature. Even on a subsoil of gravel or sand, the introduction of the thorough drain system would be beneficial; but as there is only a small portion of that sort of soil in this country, the greater part being super-imposed upon a wet soil, it becomes of the first importance to improvement in agriculture, that means be taken to render the soil dry. Many attempts have been made with that view, but until the introduction of the thorough drain system, there was not the power of draining land, on whatever subsoil resting, and rendering it completely dry. The purpose of this lecture is to illustrate the principles on which this system acts; then, to show the advantages in carrying on the different processes with respect to the various crops; and then to explain the modes employed to render this drainage effective.

[Mr. Smith here illustrated, by a diagram, his method of thorough draining; the soil, the subsoil, the drains, &c., being represented.]

In referring to two lines, representing the direction of drains, he had drawn one at a greater inclination than the other, to show the advantage of making the drains deeper than they generally were. The prevailing practice was to make the drains two feet deep, but he preferred an additional six inches—it was of great importance to allow the water to go off as quickly as possible, and this advantage was secured by cutting the drain to a greater declination. People suppose that at a great depth water would not go off at all, but this was a mistake. Another advantage from a deep drain was that it allowed the whole bank of soil to become completely dry, and it consequently required a very heavy rain to wet it. The action of the atmosphere too required to be taken into account. He would not enter upon the chemical question, but *it was well known that soils were much improved by the action of the air, and this advantage could only be secured after the water was withdrawn.*

To render the field completely dry, a great number of drains should be cut, and they should be laid off in parallel lines beginning at the highest side of the field. This secures a thorough drying. When the lines run parallel, much greater effect is produced than when they are drawn across. When drawn across, the drains may catch the water, but it does not run off so readily.

The distance at which the drains should be placed will depend on the soil. If the field has been subsoiled, the plough will form artificial channels in the soil below. If it is a stiff soil, it will keep long upon the surface; the more free the soil is, the greater tendency it has to allow the water to pass: so that on a stiff soil, such as the stiffer clays, taking into account the nature of the subsoil and the soil itself, about the same drain, will serve on all soils. The distances are generally from 15 to 20 feet: in some soils individuals have put in the drains at 12 feet; but that is, in some degree, throwing away money. From observations which I have made myself on all sorts of soil, I recommend about 16 to 20 feet as the distance from one drain to the other.

The way I usually proceed in draining is, first, to find a good bottom-level to run the drain into. In some parts of the country there is difficulty in getting an open level to carry off the whole water of the district, but by a proper engineering it may be accomplished in most situations: because it is found that if proper channels are executed, a larger quantity of water will be discharged with a very small fall. In an endeavor to carry off water, I found that in a drop of four inches in a mile, thirty feet wide and six feet deep, I could discharge 300 tons of water per minute: which is much more than would fall in a very extensive district indeed. So that if means be taken to carry off the main level, a fall may be had.

I should make the great main drain, if possible, about four feet deep—three feet six inches will do; but in order to have a drop from the one drain into the other, I make the main drain four feet deep, the receiving drain three feet deep, and the parallel drains two feet six inches. When there is any

rise in the ground, or any hollows over which the water cannot very well flow, it is necessary to make a cad's drain. That should be made about six inches deeper than the other drains which fall into it; then running on, it discharges itself into the main drain.

As to the manner of executing the drains, various modes are recommended, and on looking to land which has been drained a great many years, where the draining has been performed carefully, all the different modes employed for the purpose of keeping the drains open have been effective. A great deal of the want of effect in the duration of drains has been owing to bad execution. In some instances fagots have been introduced for the purpose of preserving the openings of the drain, and these have been found to continue and to preserve the openings in a perfect state for nine —in some instances, for twenty years.

In Scotland the peat-top is frequently used to form the tiles for drains. It does well in clays which are pretty stiff, but not so well in softer soils. In some sandy soils, the sides not being sufficient to resist the pressure of the top, the tile gradually sinks down and closes up the drain.

Another mode of filling drains is by stones broken into the usual size for making roads. Much has been said against the use of this sort of filling but when properly executed, the work is as durable as can be required. Where stone can be had, and tiles are expensive, I should prefer it to the tiles; it prevents any vermin from travelling in the openings of the drain, such as rats and mice, which do a great deal of mischief. The great point is, to be careful in covering over at the tops. As soon as wet comes, the sand and other materials silts down into the stones, and they are choked up. I have found drains carefully executed completely destroyed in the course of a couple of years. If drains are so packed that the water falls down on both sides, the parts over-lapping each other, there is no opening whatever for the sand to find its way down. If drains are carefully cleared in this manner, I will warrant their duration for almost any period of time. I have executed myself about 130 miles of drain in this way, and have had them all filled with stones; many of them have been done 15 years, and there has not been a single instance of failure.

A gentleman in the theatre inquired the nature of the soil in the case alluded to.

Mr. Smith replied, both on a gravel and a clay soil. Many persons have asked whether or not the drains would be choked up in particular positions. I have always asked them what position they referred to, and have opened it up that they may see; and in no instance have I found a single drain choked up. I have the drains of 100 acres all discharged into one pond, provided for the purpose of seeing how much deposite came from the drain; and although we have had heavy rain, I have never seen the water in the pond tinged as if there was much soil in it. I can, therefore, safely recommend stones as a sufficient drainage: and in many parts of the country it is much cheaper than tiles.

The next filling used for preserving the opening of drains is the drain-tile. These are usually made of clay, and burnt. They are very handy and useful; and where stones are not to be had they are to be preferred. But there are districts where the clay-tile cannot be procured at any reasonable price. Lord James Hay has recently discovered a method of making them of concrete stones cemented by lime; in most instances they will come considerably cheaper than the brick-tile, and, if executed on the ground, where they will not have to be carried far, the breakage will be found to be very little, and they will prove to be durable. The cement made of lime is more lasting when covered up than if exposed to the atmosphere.

There are two other modes of making drains—peat-earth has been cut into a shape somewhat like a hollow wedge; and a sort of instrument has been made for the purpose of cutting peat-earth into the form of the tile, so as to produce an opening not liable to the objection of the wedge, which frequently sinks and pulls up the opening. A stone is frequently used to lay the concrete tile upon, and prevent its sinking. It is also made of concrete.

Many persons have expressed the opinion that, in some of the very stiff clays, drains of this sort would not be efficacious, and that the application of the subsoil plough after the draining would have no good effect. With the view of showing the beneficial results, both of draining and subsoiling, I have brought some specimens, of different clays, in order to show what improvement can be made. Here is a piece from the Pass of Stirling. This kind of soil has been cultivated from a subsoil, and has been known to produce excellent crops of Swedish turnips. Here is another very hard clay from Yorkshire.

A gentleman inquired how long after the subsoiling the land assumed a different character.

Mr. Smith—almost immediately—in the very first year. It requires some years before it becomes adapted for a turnip soil. I have a specimen of some soil which twenty years ago was so extremely stiff from the alluvial deposite in the Pass of Striling, that it required to be broken with large mallets, to reduce, mechanically, the great lumps of soil. Thorough draining or subsoiling was never thought of till about twenty years ago, when this land was first drained; and now they get from it splendid crops of turnips, and in almost any season.

A gentleman wished to be informed of the nature of the soil in Mr. Smith's farm.

Mr. Smith—It varies. In some parts it is sandy clay, and in others, clay perfectly impervious to water. *When I first began to subsoil there was not more than three or four inches of active soil properly so called, for growing plants: after a labor of about fifteen years I have now an active soil of sixteen inches, and can turn over that now in any part of the farm.*

How near are the drains in order to produce that result?

Mr. Smith—Twenty feet. I think a distance of about eighteen or twenty feet from drain to drain is a proper distance for almost any subsoil. I shall now proceed to detail the application of the subsoil plough.

When I began to cultivate my own farm, although I had put in the drains, I found they were not so efficacious as expected, and I then began to think of stirring up the subsoil, which gave rise to the idea of the subsoil plough. I thought I must construct an instrument which

would execute the work with the least possible power. I made my plough strong, and of that form to which the least resistance would be opposed, at the same time taking care to have sufficient power fairly to stir up the soil.

I will here explain the principle of the subsoil plough. The great principle is, that there are many subsoils, which, though capable of being converted into a good soil, yet if brought up and mixed with the active soil, will so far deteriorate it as to make it for some time sterile. The great point is to stir up the subsoil, still retaining the good soil on the surface. Stirring up the subsoil would, in the first place, very much facilitate the escape of the water into the drains; and in consequence of the passage of the water through the stirred up subsoil, and the attendant admission of air, it would be so acted upon as to be converted into good soil, and at the same time have all the advantages of working the active soil as before.

Upon the application of this principle, I have been successful in every instance. The process of applying the subsoil plough is this: a common plough goes along first, and removes a furrow of the active soil. After that the subsoil plough passes along below, and scarifies the subsoil to the depth of from twelve to sixteen inches, in some instances eighteen inches. This is continued furrow after furrow, the plough going first to lay the active soil on the part already opened up; then the plough comes a second time and takes off a furrow from another part of the soil, and places it on that which is already scarified.

As to the proper period for applying the subsoil plough in places where the drains have much effect, the subsoil plough may be applied the following year; but in clay soil it is important to give the clay sufficient time to dry, and to have it in a friable state; because, in the application of the subsoil plough, when clay subsoil has been recently drained, and it is not sufficiently dry, more harm is done than good; the clay being worked in a wet state is almost prepared for making bricks. If we once work it in that state it is a long period before it recovers its friable property again. Therefore, in soils rather free, the subsoil plough may be used the second year after the drainage.

The proper time to execute drains is the summer season; you can then get it much more tidily done, and the drains are prevented from running. In many places there are little sandy veins and portions of running sand, which are very apt to fall in before the drains are covered up. In the winter season this is almost sure to be so; you may be taken with frost, which draws off the adhesion of the earth, so that it falls down, and fills up the drain. It is best to execute them in grass land before it is broken up for cropping, otherwise it is too soft. Executing it therefore in the summer season on the lee produces very little loss, because the growth of the grass in the after part of the season will be so much increased by the execution of the drains, that you will be repaid for the time lost for the use of the pasture during the time the drains were in process of execution. After the drains have been completed, take a crop from the land, and if the land has been pretty good, it will perhaps afford two crops: at all events, one crop should be taken: that will pass over one summer before the subsoil is to be ploughed. During this season, the earth between the two surfaces has time to dry; it is more friable, and the subsoil plough will be more efficacious in stirring it up. It often happens that there are stones in the soil, which must be removed before you can proceed with good husbandry; and it will be found that in consequence of the contraction of the soil, they have become in some degree loose, and will be turned out very easily by the subsoil plough. In many instances we have stones exceeding 200 lbs. weight, which are turned out very easily by the subsoil plough with four horses.

With regard to the direction in which the subsoiling ought to be carried, I should say at right angles with the drains; you thereby form channels from the centre to the side, in all directions. In that manner you form artificial channels from the centre of the ridge into the drain; these may partially close up, still there is an openness given to the subsoil, which will permit the water to pass freely.

Having thus applied the subsoil plough to stir up the subsoil, the after cultivation may be the common rotation of the country, such as the farmer thinks suitable. When agriculturists have subsoiled their land, they should lay down the land flat on the surface, without any ridges or furrows. Nothing is more injurious to land than ridging it up. In the old modes of draining, it was quite necessary to have ridges and furrows; but now, when land is thoroughly drained there is no occasion for it, and it is hurtful; because when water falls on a rounding off surface, it immediately begins to sink away to the lower level, and the water which has fallen on the tops and middle parts of the ridges is added to the water on the side, which has thus to bear a great deal more than its own proportion of water; the water carries portions of the soil along with it, and the cracks are constantly filling up by the running of the sand from the higher part of the ridge to the lower part. When a field is laid down with ridges and furrows, especially on stiff land, a great part of the best of the land runs down into those furrows, and is deposited in large quantities at the bottom of the ridge, thereby doing a material mischief. If laid in a flat form you get rid of this evil, and obtain this advantage—that if the water is beneficial to the soil, which it certainly is, you have that benefit equally distributed; every part receives its own water, and the benefit which the water can give.

It is the suggestion of scientific gentlemen that the rain in falling from the atmosphere absorbs a considerable quantity of ammonia; and if there is any affinity in the soil for ammonia, if the soil wants ammonia, the affinity will extract the ammonia from the water, the ammonia remaining in the soil for the nourishment of plants. Where artificial manure is put into the soil, some of the fibrous parts of it will be carried away with the water, and be carried down to the region to which it belongs; and although not so near the surface as it was before, it is near enough for the plants to reach it: when they put down their roots.

A peculiar change takes place in any subsoil—it does not matter what composed of after it is ploughed. This change begins to take place immediately, and the soil gradually goes from the

state in which it was before to that of a mould. If you examine a soil which has become mould, it is of a peculiar structure. It appears as if all the particles were connected together, and it seems to have some attractive property by gathering together in that way. Vacuities for the air are thus formed, and there is a tendency to absorb and retain as much moisture as is useful to the plant. If filled entirely with moisture it is injurious to the plant, but if a certain quantity, becomes beneficial; and when a great depth of soil is attained, there is great advantage indeed, in either a wet or a dry season. In a wet season the water flows away, leaving the soil in a dry state; but in consequence of the mouldering state in which the soil is, it is retentive of moisture, and there is a great magazine of water preserved in soil for a dry season. Being covered by the active soil, the drought may penetrate a few inches, but in consequence of the lower part of the soil being covered with this upper stratum, it is defended from the extreme action of the rain, and a very dry atmosphere. It will be found that in soil so treated and converted into this mouldy condition, in dry seasons sufficient quantity of moisture will be retained for the use of the plants, which will grow vigorously when land in the same neighborhood is completely dry.

I do not think that it is possible to drain land too much, from the fact that the mould becomes an excellent magazine for the retention of moisture. A circumstance took place in regard to this in my own district, in 1826, a very dry season. In that year there was so long a period of dry weather that the pond was dried up, and there was a great deficiency of crops. I had a field which had been treated in the way I have explained, and I had a crop of hay on it. The hay in the country round produced not above half a crop. On this field, which I had deepened to 16 inches, I had a splendid crop. A proprietor of land in the neighborhood, one of the old school, resisted to the utmost with regard to the result of thorough draining and subsoil ploughing. A person occasionally employed by me was also engaged in doing work for him. He had asked about this hay, and the old gentleman was rather puzzled at the state of the crop, and exclaimed that he really thought I had drained my land so much that I should have no crop at all. He was immediately after this completely wedded to the system, and from that day he has been vigorously engaged in introducing thorough draining and subsoiling all over his estate; and he is now having a great deal of poor soil, on a very rich and productive estate, treated in the same way. Taking the average of that gentleman's estate, he now produces double the quantity of corn that he used to obtain. He now grows potatoes where he could not grow them before, and on the old clay he produces regular and large crops of turnips.

An inquiry was made as to whether there was any land where subsoil ploughing would be successful without thorough draining.

Mr. Smith—I am much obliged for that hint. Many persons have thought that ploughing the subsoil might do without thorough draining, but there are few instances indeed in which that application of the plough will not be hurtful instead of being beneficial. If you have a retentive bottom which will not allow the moisture to pass away, it must remain till absorbed by the atmosphere: therefore the greater the chamber for receiving rain, so much the longer will the land be kept in a wet state. The practice which now prevails in the English clay districts, of ploughing with a shallow harrow, has arisen from the experience of ages, which has taught them that on such soils you cannot cultivate wheat if you plough a deep furrow, because you make just so much the larger chambers to receive water. Even in open soils I would not recommend the application of the subsoil plough till the thorough draining had been executed.

A gentleman asked if it was necessary to repeat the subsoil ploughing?

Mr. Smith—It may not be essentially necessary to repeat the subsoil ploughing, but it is beneficial. I repeat the ploughing at every shift, every time I break up my fallow.

Is it always done in the same line?

Mr. Smith—Generally; sometimes I have done it obliquely.

Did you ever try it diagonally?

Mr. Smith—Yes: perhaps it is better to do it in that way according to the drop of the land. The first idea I had was to use the subsoil plough; then I thought I might use the trench plough, and that I might, the next shift, turn up the whole soil, so as to have a complete mixture. In some fields, where the soil was of a better quality, and there was more vegetable matter, I had excellent crops; on the poorer soils, I found that by bringing up the subsoil to mix with the active soil after the first shift, I did a great deal of mischief. I found, especially with regard to grass, that I could not get that growth of plants which I had before; immediately on observing that I resolved a third time to go over those fields, and that I would again use the subsoil plough; I have now fallen into the practice of doing so every time I turn. I took up at the first shift, perhaps about 3 inches, even in the poorest field, the next time 3 inches more; and by that means I gradually attained a thorough depth of soil to the extent of sixteen inches. On my own farm I have a thorough depth of sixteen inches, but that is in consequence of using a trench plough on the second shift, and in some fields that was unsuccessful. If I had had then the experience I now have, I would use the subsoil plough at each shift; instead of going down the whole sixteen inches, I would only take up perhaps three inches the first time and three the next, till I had completed the depth of sixteen inches.

A gentleman—In draining in the summer season, how do you get the level?

Mr. Smith—By the spirit-level, of course.

A gentleman—The great object would be to get it done cheap; but it would be much more expensive if done in the summer.

Mr. Smith—No doubt; but if I had the choice of executing drains during the winter, at an expense of 50 per cent. less than the summer, I would prefer doing it in summer. The efficiency is of far more importance than the expense.

In summer sometimes the land may be too hard?

Yes. In some places, but the bulk of the land will retain as much moisture as will enable you to get through it with the plough. Of course that

will vary in different parts of the country. In some places it had better be done when the ground is more moist. Still, I would recommend it to be done, not in the winter, but in the spring or autumn.

A gentleman—I may be perhaps allowed to say that there are cases where subsoil ploughing is effective without thorough draining—as, for instance, in the soils of the moorlands. I have tried it myself in the moorlands, and have found that by simply breaking up that pan which holds up the water which made the lands dry in summer and wet in winter, all the water escaped; and lands before not worth 5s. an acre, let for 20s. after it was done. That was certainly a peculiar case.

A gentleman inquired whether the rocks under the stratification were horizontal or perpendicular.

Mr. Smith—There was very little stratification at all. I am aware of what has been stated with regard to destroying the pans, such as are placed upon gravel, but, thorough draining may be applied with advantage to sand or to gravel; and though in the gravel the opening must be at a considerable distance, and consequently the water will be long in finding its way out, if it gets into the channel it will go off easily. These dry soils retain moisture a great deal too long for agricultural purposes. A neighbor of mine was draining his land—a sort of irregular subsoil—and in some places had very considerable ruts or rising ground with sandy and gravel bottom; he instructed his steward to stop the drain when he came to those holes. This was done, and two winters after the gentleman was coursing one day, and all at once his horse sunk over the fetlocks in the soft ground. He called out to his steward to know the cause, and his steward explained that this was the portion of land on which he had desired the drain to be stopped. This fact illustrates what I have said, that when agriculturists have determined on draining a field they should resolve to drain it wholly, otherwise they are only throwing the expense away. Where persons have drained wet parts, and left what they considered dry undrained, they have soon found that the land formerly the wettest was then driest, and when the part which had been drained was ready to receive the seed, they were delayed a few days till the other portion was sufficiently dry. In a country where we have much changeable weather, all agriculturists know the advantage of a single day. If a field is uniformly drained all over, you will perhaps be able to sow your seed one, two, or three or four days earlier than if it were not drained; sometimes now you lose the opportunity altogether, because it frequently happens that two or three days intervene; very newly dried land will be ready for being sown, whereas other land which was not drained, would require a week or fortnight before you could sow it.

With regard to the application of thorough draining on porous bottoms, no doubt much good will be effected without subsoil ploughing. I have found it most efficacious on sandy and gravel bottom. I have known instances of land of that nature being very greatly improved after being stirred up by the application of the subsoil plough.

A gentleman—Your observations apply to thorough draining; many people call it *furrow* draining. I wish to know whether you have any reference to deep draining, and how, as in the case of a spring lying deep, you meet the difficulty occasioned by the water. Two feet and a half drains would not touch a spring such as that described on the diagram. How do you get away the spring water.

Mr. Smith—They are called furrow drains, because they are made in the furrows. I call the mode of doing it *thorough* draining. I use the term to express the result. They are called sometimes wedge drains, top drains and tile drains; but the principle is, that you have the drains sufficiently close together to carry off the water quickly; and then, that the best mode of laying them off for that purpose is to arrange them in parallel lines, and carry them as much as possible in the sloping direction of the land.

With regard to springs, the spring water can do no harm till it enters the subsoil; so long as it keeps below that, you need not care about it. The moment it reaches the bottom of the drain, it finds its way into it, and will be carried off by it. I have found it necessary sometimes to carry a drain through the eye of the spring. Springs sometimes come in little channels, at other times in a sheet, according to the nature of the subsoil. When they come in a sheet, the cross cutting completely scarifies them. If a spring comes out at a round opening and happens to fall in between two drains, I have found it necessary to cut the drain into the eye of the spring. But in every instance where the water flows between two beds, I have found that by cutting the drain across, it was completely cut off.

I will now describe to you the mode of constructing the draining tile of Lord James Hay. One way of doing it is to construct the tile on the ground, and then carefully place it in the drain; the other is to execute it in the drain as you go along, and immediately to cover it up. The composition of the tile may be varied considerably, but the proportions which I have found to do very well are—

Lime - - - - -	1 part
Blackened cinders - -	0½ part
Sharp fine sand - - -	3 parts
Gravel - - - -	3 parts

making altogether 7½ parts, or 1 measure of lime to 6½ of sand and gravel; the cinders may either be used or not. The gravel selected should not be of a large size.

A question has been handed to me as follows: "What effect have thorough draining and subsoil ploughing on the habit of throwing out the wheat plant by frost?" It is well known to be owing to the moisture that the wheat plant is thrown out, and whatever removes the moisture, will have the favorable tendency required. I have known many places where almost every winter the greater part of the plants were thrown out. Now, the result of thorough draining and subsoil ploughing is that they retain the plant perfectly well, and have very abundant crops.

The best of the two modes which I mentioned of forming the tiles, is to make them just where the drain is wanted, and in a few days they will become so dry that they can be placed in the drain. One disadvantage is, that these tiles will not stand carting for a length of time. They require several months before they will admit of

being laid on over one another. But in most instances, the making of the tiles can be accomplished on the spot, and in the course of a few days they may be put into the drain. It is, then, of great importance to cover them immediately with some light soil, free from stones, and to beat them down so as to preserve it from injury. If there are any stones in the soil, they may get down to the tile and seriously injure it.

[The lecturer then exhibited the method of forming the tiles in the drains, which is done by placing the mould in the place in the drain to be occupied by the tile, then laying upon it the concrete, and after pressure by an instrument similar to that used in the former process, drawing out the mould by means of a long handle attached to it for that purpose.]

I have an interesting communication to day from Scotland, which, though not immediately connected with the subject before us, bears intimately upon it. There are great doubts respecting the propriety of putting seed deep into the soil, or covering it very lightly. Experiments have been made on that subject, but none so conclusively as that which I have now before me, which relates to the springing up of the more tender seeds, the grass seeds; and it shows the great importance of having a shallow covering over them. This experiment was made by the Messrs. Drummond of Stirling, the individuals who first introduced the agricultural museums.

This experiment tends to show the great importance of a light covering to grass seeds. I have made a harrow of a peculiar construction, which reduces the surface soil very much without tearing up the ground. It has no teeth, but acts by little sharp discs closely set together, which curve very slightly. I have found this instrument also very efficacious if used as a bush harrow.

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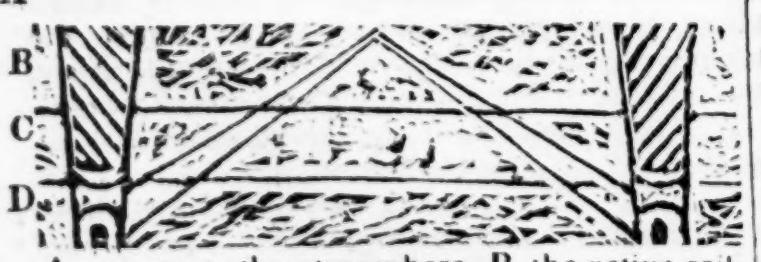
CONTINUATION OF MR. SMITH'S LECTURE.

The report of Mr. Smith's Lecture was given from the Mark Lane Express, which did not contain the diagrams to which Mr. Smith is reported to have referred when lecturing. After that report was in type we received a second copy of the Lecture in the London Farmer's Magazine, with the diagrams. For the gratification of our readers we subjoin these diagrams with the accompanying explanation. Though not in their original position, they will not be found out of place; and the mere report of this lecture to any intelligent farmer is worth ten times the annual subscription of our paper.—Ed. N. G. F.

I shall first endeavor to illustrate by a diagram, the mode in which this system of drainage operates.

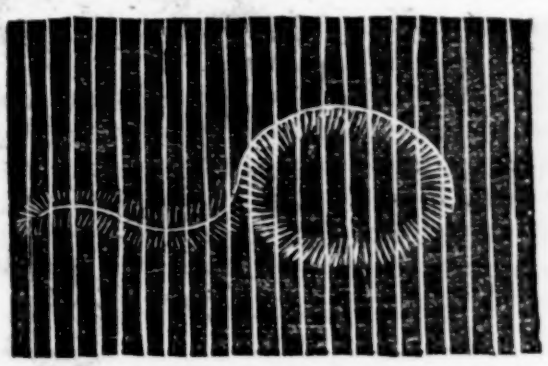


A represents the atmosphere, B the active soil, and C the subsoil stirred by the plough; D represents the part of the subsoil above the level of the drain.—When the ground has been so drained, the first effect that takes place is the drying of the subsoil, which begins generally at the drain, however close and dense it may have been; it begins to crack there by the water giving way. These cracks are continued till they pervade more or less; and in the course of a few months, or perhaps a couple of years, they may have obtained complete effect; the whole of the soil has become dry. The soil which has been worked before on the surface of the subsoil, is in an open state from its former working; the rain falls on the earth, and is received into the intervening spaces, the chambers all receiving so much rain, and the different parts of the soil absorbing a quantity of rain. But while the rain is falling, the drains are carrying off the water from the whole mass. Of course when the rain ceases to fall, this water goes off more rapidly.—At first it will be brim full (if I may use the expression) of water; it is constantly running off, and the water gradually subsides.

The usual practice is to make the drain two feet deep, but I prefer two feet six inches, for this reason, that it is of the greatest importance that the whole should flow off as rapidly as possible. Persons are apt to suppose that the water will not find its way to a drain at a great depth, but that is in some measure a great mistake. When there is more water to pass through, there is more retardation to the passing of the soil; but, notwithstanding, by giving the drain the inclination which I propose, you have the water carried off much faster. There is also this advantage—that when there has been a long season of dry weather, the whole of the bench becomes completely dry; and in that case it takes much rain to wet it, and if the rain is not very abundant, perhaps the water will not stand higher than B. When water falls upon the soil, there is one very great advantage in having a large bench besides. There is a quantity of air which fills all the vacuities in the soils—the active soil itself, the stirred subsoil, and the subsoil which has been laid dry. When the water has drained off, air takes its place, and the action of the air is very beneficial on the whole of the soil moved, particularly the active soil; and just in proportion as you have a great area to receive the water, and to receive air as the water is drawn off, so in proportion you have a tide of atmospheric air passing through the belt of active soil which is found very much to improve it. We know this soil is very much improved by exposure to the atmosphere; but if it improves in a greater degree by exposure to the sun and light, it is still importantly improved by the passage of the air to the lower strata when the water is withdrawn.

In order to render a field completely dry, it is necessary that a great number of drains should be placed in it; and the position in which they should be arranged will be obvious from this diagram, which represents a field sloping down, with a rising ground in the centre, and rising ground towards the side.

This is made for the purpose of illustrating the mode of laying off drains, and the mode of catching the water when any hollows intervene. In laying off the drains, you will drain the field more effectually by laying them off in parallel lines, than by doing it in any other form; because, if you depart from the parallel lines, you get into corners, and into some spaces not so near the drain, and others too far from it. But in laying it off in the manner



shown in the diagram, you get a complete effect on the whole surface. When drains are laid off to run in the direction down the slope, they have a much greater effect in draining than when laid across the field. It is rather difficult to induce persons to believe this, but it is the fact. If carried across the field, though they may catch the water, yet, having less declination, it will remain longer at the bottom of the drains. Another objection is, that the water which is there retained has a tendency to sink away to the sides of the drain, and therefore will probably come up some distance below the drain. But if the drains are carried in the direction pointed out, you cut the drain so that the water constantly sinks into it ; and though it may fall a little into the slope of the hill, yet the greater part of it goes to the drain.

CHANGE OF SEED.

By Professor Sprengel, of Göttingen.

Translated for the New Genesee Farmer from the German.

Occasional change of seed is unquestionably of the highest importance in agriculture. Observant farmers have doubtless remarked that, though all possible pains be taken to secure the best and most perfect seed grain, it is generally more advantageous to procure a supply from some other and distant section of country.

In the year 1811, I obtained a parcel of multicaulis rye from Friedland in Bohemia—a celebrated rye district, having a clay soil. This rye, thus brought a distance of 21 miles, was sown in a sandy soil, rich in humus, which had been manured by ploughing in a green crop of vetches. It vegetated well, grew astonishingly, and attained a height of from 9 to 9½ feet, with heads proportionably long—measuring from 9 to 10 inches, and containing from 115 to 120 grains each. In the ensuing fall I sowed some of the rye thus produced, on a soil of similar character and equal quality, manured as before by turning in a crop of vetches. The stalks, however, scarcely attained a height of 7 feet—which was the more remarkable, as, in the summer of 1812, the season being peculiarly propitious, all the other rye in the vicinity was unusually tall. When sown again, the following season, this rye produced stalks averaging only 5 feet high ; and the heads were proportionably shorter and less productive, in each year. The deterioration of this rye was rendered the more obvious, as, in the year 1812, I procured some fresh seed from the original locality ; seeded it on land of similar quality, after ploughing in vetches as before, the stalks of wh ch grew to the height of from 8 to 8½ feet—contrasting strongly with the more stunted growth of the other.

I have experienced similar results in the cultivation of buckwheat, oats, barley, beans, potatoes, and flax. With us, the stalks of Indian corn, also, from seed imported from the southern part of the United States, attain a height of 15 or 16 feet, the first year ; but the product of the second seeding will not exceed 10 feet in height : and in the third year, it will not be taller than our domestic corn.

On many soils a frequent change of seed appears to be essential, for various reasons. It is undoubtedly true that the seed can only produce a vigorous and perfect plant, when its germ is adequately developed ; and it is equally certain that such a developement can result only from a proper commixture of the ingredients of a soil, aided by the influence of climate, seasons, &c. But the success of the plant is determined also, in a great measure, by the kind of nourishment afforded to its earliest germs and radicles. Hence, when seed grain, having a perfect germ, is supplied, seasonably and in due proportions, with those substances which contain, in an assimilable state, the peculiar *pabulum* or nourishment which the infant plant needs, it will grow vigorously, and flourish permanently to maturity if the soil continue subsequently to furnish a proper supply of the requisite food. A field recently manured with fresh stable dung, it is well known, will not produce good seed grain ; and hence it is probable that the good or bad quality of seed grain depends on the presence or absence of certain ingredients of soils. Grain grown on land recently manured with animal dung, contains, according to Hermbstadt, more *gluten* than that grown on lands not so manured ; and where the land was manured with sheep dung, the grain produced is peculiarly rich in gluten, because this kind of manure contains in abundance the nitrogen essential to its formation. Now such grain is probably unsuited for seed, precisely because it contains too great a quantity or proportion of gluten, whereby the starch of the seed grain is too suddenly decomposed. Whereas, were a less proportion of gluten present, the starch would be *gradually* converted into *sugar*—the earliest food required by the developing germ. We may therefore conclude that, in general, all grain is unsuited for seed if it contain a very large proportion of gluten, or of other nitrogenous substances capable of converting starch rapidly or suddenly into sugar. But in grain intended for breadstuffs, this over-proportion of gluten is a very desirable quality ; because the more of it any grain contains, the better is it adapted for producing flour—gluten being among the most nourishing substances.

Experienced farmers know it to be very advantageous to sow, in a sandy soil, rye grown on clayey or aluminous upland. The reason appears to be this, that the rye from clay soils contains only the due proportion of gluten. On the contrary, it is found to be improper to sow rye from rich, moist bottom lands on sandy soils ; because the seed contains such an over-proportion of gluten as to convert the whole of the starch suddenly into sugar, and the sugar as suddenly into other substances not congenial to the germinating plant. Sandy soils in general do not furnish good seed grain, inasmuch as such grain is deficient in certain substances—as lime, magnesia, &c.—essential, nay indispensable, to the perfect develope-

ment of the germ. That sugar does, in fact, play an important part in the germination of seeds and the first developement of the plumule and radicle, is manifest from the fact that all the minutia seeds, parsley, carrots, &c., germinate better if steeped for a few days in a solution of sugar or in a diluted syrup. But though sugar is unquestionably of great importance in the germination of seeds and in the earlier developement of plants, I do not maintain nor assert that the successful issue of the process is the effect, exclusively, of this substance. On the contrary, I am convinced that, to secure a propitious result, the presence also of alkalies, sulphates, and chlorides, in due quantities and proportions, is absolutely requisite.

There are soils which imperiously require an annual change of seed. But it is, in most cases, sufficient to procure a supply from places in the immediate vicinity, or not more than three or four miles distant—a circumstance which the principles above indicated will serve to explain.

Climate also has a very conspicuous and important influence on the quality of seed grain; and experience teaches that, for seed, such grain is best suited as was grown in a colder region or district. Chemical analysis shows that such grain contains a smaller quantity of gluten than that grown in warmer climates. Wheat from the north of Europe contains much less gluten than that from the southern coasts of the Mediterranean.

The deterioration of grain, so as to become unfit for continued seeding, I have most frequently observed in oats. But I remarked, in every instance, that the soils which produced bad seed oats were deficient in lime, magnesia, or some other substance or ingredient requisite to the full developement of the germ. Oats invariably become unfit for seed if sown in soils deficient in lime or potash; and chemical examination shows that good seed oats contain much lime and potash. Now, though we may, from these and similar circumstances, deduce in part the reasons why a change of seed is ofttimes necessary, it is not to be denied that, for the full elucidation of this matter, more numerous experiments and observations are desirable. Probably results highly satisfactory could be arrived at, if good and bad seed grain, as well as the soils on which they respectively grew, were subjected to accurate chemical analysis.

The great benefit resulting from frequent changes of seed is particularly striking in the culture of flax; it being well ascertained that seed imported from Russia is greatly superior to that of domestic growth. Russian flax-seed, though commonly an ill-looking, unpromising article, invariably produces a much longer stalk and fibre than native seed, apparently much better. That climate likewise, in this case, exerts an important influence on the due proportionment and admixture of the ingredients of the seed, may be considered certain. But what the ingredients really are which contribute to, or effectuate, the more vigorous growth of the flax from Russian seed, remains to be ascertained.

Again, by means of seed grain, climate may in some sense, and to some extent, be transferred from one region to another. Thus, if we sow, in a colder climate, seed oats from a warmer district, where oats ripen early, the plant will, in its new locality, mature at an earlier period than the domestic oat, though not so early as in its native region.

Finally, it may be considered as an ascertained fact, that soils chemically ill constituted, require the most perfect and best seed grain. A judicious selection will, in such cases, very materially increase the quantity of the product—the difference being in some cases not less than fifty per cent.

ANCIENT AND MODERN AQUEDUCTS.

From the New York State Mechanic.

The firemen of the city of New York have chosen the 10th of September, the anniversary of Perry's victory on Lake Erie, to celebrate the achievement of the Croton aqueduct, the most perfect and efficient structure of the kind of ancient or modern times. Although contrivances for the conveyance of water from distant sources, for the supply of cities, are of great antiquity, we have no accounts of aqueducts, properly so called, till the time of the Romans. The city of Samos, says Herodotus, was supplied with water by piercing a hill 300 feet in height, by a tunnel 4,200 feet long, 8 feet high and 8 feet broad. In Egypt, in Babylon, and in Judea, works of considerable extent were constructed for the conveyance of water. The Romans were celebrated for their aqueducts, which were not confined to the capital, but were constructed at many of their most important cities in Europe, Asia, and Africa, the remains of which are still seen. That of Segovia, in Spain, built in the time of Trajan, is a magnificant work, consisting of double rows of arches, 109 in number, according to Malte Brun, the largest of which are nearly 90 feet in height from the ground to the conduit, and wholly consisting of enormous stones joined together without mortar, by which water has been conveyed into the town for seventeen hundred years. The neighborhood of Rome is distinguished by a long series of these almost unperishing memorials of her ancient magnificence. Some of them are still in use, and others, though in a state of ruin, are among the greatest ornaments of Italy. Some idea may be had of the extent and importance of these works, from the fact that the city, containing a population of four millions, was supplied with water from sources varying from thirty to sixty miles in distance, and that at one period no less than twenty aqueducts brought as many streams across the wide plain in which the city stands. Artificial channels winding along the hills and mountains, and tunnels through interposing barriers, led the water the greater portion of the distance: but the aqueduct was required to cross the valleys, and to conduct the stream from the surrounding hills to the walls of the eternal city. In some places their manner of construction required arches of 200 feet in height, and one aqueduct is said to have consisted of nearly 7,000 arches, in many places more than one hundred feet high. There is nothing more interesting, or more really beautiful, says a writer on this subject, in the existing ruins of ancient Rome, than the remains of these splendid works, which radiate in almost every direction, and run across the almost level plain, out of which its hills arise in long arcaded series, whose simplicity and long unbroken continuity produces a degree of

grandeur unmatched by the more labored and more pretending works within the walls. The city is still abundantly supplied with water by three of these ancient aqueducts, which have undergone repairs and restorations by the direction of the Popes. The *Aqua Virginia* and *Aqua Felice* are the principal.

Of the most celebrated aqueducts of modern times are that of Caserta in Naples, and of Maintenon in France, begun by Louis XIV. in 1684, to carry water from the river Eure to Versailles, but abandoned in 1688. This was designed to have been the most stupendous aqueduct in the world; the whole length contemplated was 60,000 fathoms; the bridge 2.070 fathoms, consisting of 632 arches 220 feet high. There is also a modern aqueduct at Bemfica, near Lisbon, in Portugal.

The Croton aqueduct greatly surpasses any of the above structures, both in magnitude and perfection. There is no useless display of gigantic arches and enormous stones, but the whole is a beautiful monument of the perfection to which the art has arrived at this day—simple, efficient, and durable. It may not present so imposing a front to the vulgar, but to the engineer and the man of science, it has an air of grandeur and sublimity arising from the vastness of its proportions. The main trunk is 40 miles in length, wholly composed of masonry, 6 1-2 feet wide, and 9 feet high. The walls are 3 feet thick, cemented into solid rock. The grand reservoir at the head of the aqueduct is caused by a dam of stone work 40 feet high and 70 broad, thrown across the Croton river, forming an expanse of water 500 acres in extent, sufficient to supply any emergency. The trunk is carried over valleys and streams, through hills and barriers of solid rock, affording opportunities to the engineer for the display of skill and taste, which has been improved with very happy effect. For instance, the bridge which crosses the Sing Sing creek is a single elliptical arch of 80 feet span, and 100 feet above the stream. The bridge across Harlem river is 1300 feet in length, 116 feet above high water, and cost nearly $800,000. Sleepy Hollow is also spanned by a series of graceful arches, and the valley of Glendenning is passed at an elevation of 40 feet, affording carriage-ways and footpaths over its arches. At Manhattanville the work is carried through the hill by a tunnel, and under the valley by pipes descending 105 feet. This mode of crossing the valleys, it is believed, the Romans never attempted, but carried the stream at a pitch of from one inch to half a foot to the hundred feet, and where the force of the current was too great, it was overcome by curves.

The water, thus conducted 38 miles, is received into the reservoir at Yorkville, which contains an area of 35 acres, enclosed by granite walls, and capable of receiving 160 millions of gallons. The distrbuting reservoir at Murray's Hill is also a work of great magnitude and expense, and calculated to endure as long as the hills and rocks. It is in the Egyptian style of architecture, with a promenade 20 feet in width at the top of the walls, flagged, and provided with an iron railing. It employed 400 men four years in its construction. Altogether, it is a triumph of skill and enterprise, of which the world presents few equals. Its completion will require two or three years yet, although temporary pipes are laid, by which water was distributed to the city on the 4th of July last. Its advantages to the city in the extinguishment of fires alone are incalculable. In the great conflagration of 1835 the amount of property destroyed was estimated at seventeen millions of dollars, one third more than the cost of this work; the extent of which was in a great degree attributable to the want of a convenient supply of water. The fire department, appreciating the great importance of the work on this score, have set apart a glorious day in our country's annals for an appropriate celebration. We hope no storm cloud may be so overcome as to shed its tears upon the scene.

ON THE IMPROPER USE OF THE PLOUGH IN THE CULTIVATION OF INDIAN CORN.

From the Southern Agriculturist.

Mr. Editor—By request, I submit to you, for insertion in the Agriculturist, some remarks and experiments I have made to prove that the plough is frequently used too late, and much to the injury of our corn crops.

It is well known to rice planters, that when rice is in joint and forming its ear, every effort must be made to advance its growth, so that good ears may be formed. The same effort, to effect the same result, is necessary with corn, and all other grains. When the ear is about to be formed, the atmosphere has less influence on the plant than previously; therefore more is required from the roots. If the soil is fertile, and well broken up with the plough previous to planting corn, innumerable small fibrous roots will run laterally, in search of nutriment, to the distance of six or eight feet, and sometimes as far as twenty feet. These laterals are very small, and easily separated from the stalk; if cut by the plough when the plant is young, no injury will be sustained, and perhaps a benefit: but they must not be cut or disturbed in any way when far advanced toward maturity. Without their aid at that period, the perpendicular, or tap-root, will not be sufficient to produce good and well filled ears. It is not unfrequently the case, that the plough is used when the corn is in silk, and at that time these lateral roots are very numerous about the surface of the ground, and must necessarily be cut, much to the injury of the crop. I have made several experiments which prove conclusively that the perpendicular or tap-roots are not sufficient without the aid of the lateral roots to produce good and well-filled ears; and that, if the plough is used too late, a good crop cannot be expected. For my experiment I selected eight well-grown stalks, just before shooting out their tassels. I had the earth cut round two of these stalks about six or eight inches from them to the depth and width of the spade, and the earth removed, so that I could see that all the side roots were cut. The earth was permitted to remain in this situation until the corn was matured. The stalks looked well, and the ears appeared to be well filled; but, on examination, it was found that there were but a few scattered grains in them.

In the next experiment a cut was made around two stalks, with a spade to its depth and width, at the same distance as above. This cut was permitted to close immediately, no earth having been removed. The result was, small ears, not well filled.

The third experiment was to cut the roots on two sides of the stalk, as they are usually cut in late ploughing. On the other sides the roots were not disturbed. The result—small ears, tolerably well filled.

In the remaining two stalks, no roots were cut or disturbed; the ears large and well filled.

The plough is not sufficiently used on our rice plantations, in preparing corn land for planting, and is generally used too late after planting, If the soil has been well prepared and in good tilth, the cultivator or hoe harrow may be used most advantageously after the second ploughing. As soon as the plants can be ploughed, the first furrow ought to be thrown from it, and the second to it; and if used again, the sooner the better, so that the corn may be laid by, when it has attained a third of its growth, or very soon after.

I will here remark, that the planter who wishes to increase his corn crop in quantity, must select his seed in the field. Seed from those stalks that have produced from three to six ears, will, in like manner, produce again from three to six ears, if the soil is well manured and well cultivated; and seed from those stalks that have produced one ear will again, in all probability, produce but one ear.

JOHN H. TUCKER.

Hampstead, Sept. 9th, 1842.

LICE ON CHICKENS.

From the American Farmer.

Mr. Editor—Having discovered an effectual mode of destroying lice in hen houses, and on chickens, and thinking it may prove useful to some of the readers of your valuable paper, I give it as follows.

To destroy lice in hen-houses.—Clear the hen house out thoroughly; then wash the walls, floor, roosts, and particularly the nests, with tobacco juice or tobacco water, from the tobacconist's; then put some fresh hay or straw in the nests, and sprinkle them with the juice, and as soon as the house is dry, you may let your chickens into it. If you find that this does not destroy them effectually, repeat the operation.

To kill the lice on about fifty chickens, take a pint of the strongest grease you can get conveniently, and mix with it about an eighth of a pound of Scotch snuff, and grease them under the wings and on the back of the neck.

Baltimore county. JUVENIS.

THE POLAR PLANT OF THE WESTERN PRAIRIES—A VEGETABLE COMPASS.

From the National Intelligencer.

Washington, August 9, 1842.

Dear sir:—In offering through you to the National Institution a dry-pressed specimen of the *polar plant of the western prairies*, it is proper that I should give a description of it and of its location. It is a species of fern, with one large flat leaf, *whose plane always points to the north and south.* The leaf is symmetrically disposed about the stalk. It attains the height of from ten to sixteen inches, and it is believed that it never blossoms. It is spread profusely in large beds over all the western prairies, from the far north-west to the far south-west. It has been seen in the prairies of Wisconsin and other regions east of the Mississippi. It is never found in the forests; or in other words, out of the prairies. It has been well known to the hunters and trappers of the west, and to the officers of dragoons; but I believe that its existence has never (at least extensively) been made known to the world. Its plane is always in the plane of the meridian, when not disturbed by high winds or other external causes. The indications are always most accurate in the valleys, where the beds are sheltered from the winds, and where the traveller finds them arranged in parallel positions, faithfully pointing out the direction of the meridian. The leaf is symmetrical, and thus there is nothing in its indications to distinguish the north from the south.

The specimen which I send was plucked from the prairies near Fort Gibson, west of Arkansas.

That its indications are actually the same wherever found is the universal testimony of all who have known of it; and I have met many who have noticed it from south of Fort Towson to a considerable distance north of Fort Leavenworth. In many instances those who spoke of it derived their first intimation of its existence from that excellent officer and capital woodsman, Capt. Nathan Boone, of 1st regiment U. S. Dragoons, son of the celebrated Daniel Boone.

The cause of the polarity of this curious plant yet remains to be discovered. Being symmetrical in shape, or rather the weight being equally distributed about the stem, it is possible that its sap or fibre is so thoroughly impregnated with certain salts of iron as to be deviated, from the period of its infant growth, by the action of the magnetism of the earth, turning like a compass needle on its stem or root as a pivot. That it is not caused by the action of light would seem probable from analogy, as vegetables acted upon by light are noted for turning their leaves or blossoms towards the sun instead of from it. At midday the plane of the polar plant passes through the sun, and thus it shuns the light. I have noticed it in long-continued cloudy weather, and could find no alteration in its position.

As the existence of the torpedo and the electrical eel exhibited the influence of electricity on animal life, this plant is very interesting as showing its probable connexion also with vegetable life; thus furnishing a link to supply the chain of gradation. It is well known that there are many distinguished naturalists and professors of physiology who would go higher still, even to the human frame, and predict the final discovery of the intimate connexion between electricity and the operation of the nervous system. Any fact connected with the action of electricity or magnetism (supposed to be one and the same agent) is now especially interesting, when there are so many ingenious minds throughout the world devoted to such investigations.

I have ascertained to my satisfaction that this plant has been well known to trappers and to many of the Indian tribes, and that they have been in the habit of availing themselves (in their tours over those vast tracts) of this humble but omnipresent guide, which a kind Providence has sprinkled over that region, and which is thus available in

cloudy weather, when the sun and stars are denied them. Even if it is granted that it is less needed by the red man, no one will deny its uses to the whites in a country destined still for a long period to be roamed by hunters, traders, pioneers, and other white men.

I will here add that Captain Boon also states that there is spread all over the far west a certain root, called the "snake root," whose juices are very grateful to quench thirst, and which is found in the greatest abundance in those parts of the prairies which are high or dry, and most likely to be deprived of water in a season of heat and long drought.

It is needless to descant upon these beautiful and striking examples of the wise provision of Nature, furnishing a vegetable compass and the means of quenching thirst, ever ready for the wanderer, and both located in a region destined perhaps for the longest period in the history of the world to be occupied by a roving population. I am, with high respect, your obedient servant,

BENJ. ALVORD.
Lieutenant United States' Army.

To F. MARKOE, jr., esq.
Cor. Sec. of the National Institution.

MANURE.

From the New Genesee Farmer.

The first step which a farmer takes toward successful business, is to understand the value of manure. And as he discovers the value, he uses all the means in his power to increase the quantity. The fact is, if every farmer who owns a hundred acres of good land, and who manages his manure according to the usual practice of the country, were to use the very best means which he possesses for its manufacture and application, he would find his pocket-book heavier at the end of each year, to use the most moderate computation at the present low prices, by at least three hundred dollars.

I need not here attempt to show how that the product of the barn-yard may be increased fourfold by the use of muck or marsh mud and lime properly applied; but my object is to call attention to another source of manure which appears to be even less known and attended to. But I ought here at the outset to caution the delicate and fastidious reader not to follow me any further, as the editor did some time ago at the *close* of a similar article, though of course I mention this fact with all deference.

Poudrette is well known to be a very powerful manure, obtained in the neighborhoods of the cities where it is manufactured. But we, away back here in the country, do not possess this advantage which our city friends do; and very few have ever thought of manufacturing their own poudrette. The contents of privies, instead of being regarded as of great value as they truly are, most people look upon as a downright nuisance. Now, if the offensive odor may be removed, at the same time that a valuable manure is made, two very important points will be attained.

I have searched in vain for a particular account of the process employed by the poudrette companies; and in the absence of such account have endeavored to use such means and knowledge as I could lay hold of; and imperfect as the mode may be, it has been of decided value to me, and may prove so to others. The entrance to the privy is well flanked with evergreen trees, and on one of the other sides which faces low ground, is a passage or road through the trees for a large tight box or trough to be drawn away from under the building, which is placed about two feet above the ground on that side for the admission of the box. A plank door shuts it in closely. Runners are placed under it so that a horse may draw it away by the iron hooks attached to it; low wheels would be better.

All the care required after this, is to sprinkle every two or three days a few handfuls of plaster (gypsum) over the inside of the box from above. This is all. Air-slacked lime and ashes are also valuable; but plaster, by furnishing sulphuric acid for combination with the gaseous ammonia, and thus preventing the escape of this volatile, but powerful ingredient, is considered the most so. Hence also, the use of plaster is found exceedingly to lessen the fœtid odor, a matter of no small consequence. Lime also greatly lessens the offensive smell, but by what means I do not know. There ought to be enough of plaster, lime or ashes, to keep the contents of the box in a dry state. When it is full, it is drawn off, spread upon the ground and mixed with the soil, or made to constitute a part of the compost heap.

I have tried only one experiment on its fertilizing power, and that a very indefinite, but otherwise satisfactory one. Very rich stable manure and poudrette were applied to different parts of a small piece of ground—the stable manure, according to estimate, being about ten times the bulk of the night soil or unmixed base. The whole was sown with turnips. The result is so far, that the turnips on the part manured with the poudrette have made a growth at least three times as great as those on the part treated with stable manure. J.

PRESERVATION OF PEACH TREES.

From the Farmers' Cabinet.

Whitemarsh, Sept. 1st, 1842.

Having, to a certain extent, succeeded in the cultivation of the peach in a limestone soil, generally considered uncongenial to its growth, I forward by your request, a short account of the method of cultivation and mode of nursing adopted.

The soil of the peach orchard is underlaid with primitive limestone, but is not of the yellow cast and tenacious texture, so general in limestone regions; which, however adapted to the growth of wheat, has but little affinity with any description of fruit. It is, on the contrary, a rich loam, and constitutes a part of the garden enclosure, the trees occupying about half an acre, and bordering on the Wissahickon creek. This location, in the immediate vicinity of the water, may possibly have a beneficial effect.

The orchard, consisting of about fifty trees, was planted in the spring of 1836. At the time of planting the ground was in grass, but was then subjected to the action of the plough, and has

since been thoroughly tilled every year, yielding alternately heavy crops of sugar beets, potatoes and ruta baga. The trees have also been examined once, and sometimes twice a year, for worms, but have not generally been much infested by them.

This comparative exemption is no doubt in consequence of the various alkaline substances which have been successfully used. The most remarkable and immediate effect has followed the use of what is termed "fallen lime," fresh from the kiln; which, when applied in the proportion of about half a peck to the roots of unhealthy trees, and covered with earth, has restored a healthy color to the leaves: and trees which did not look worth a week's purchase, have produced fair crops of good fruit in after years. Ashes from anthracite coal, have also been applied with very good effect. These applications have usually been made in the spring, but occasionally later in the season. This year, wood ashes were used in June, with a marked benefit. Soap suds also have been applied to advantage. In fact, any substance, which by its caustic quality is destructive of insect life, must be beneficial, provided it be not applied in quantities sufficient to injure vegetation. It is an interesting and encouraging circumstance, that several substances combine the properties of destructiveness to insect life, with a direct and positive stimulating effect upon vegetation. In illustration of this fact, my friend Dr. Noble has applied oil soap to a portion of his extensive peach orchard, in the state of Delaware, to manifest advantage.

The mild weather of January and February will sometimes bring forward vegetation, so that the peach trees are liable to blossom prematurely. An attempt has been made to obviate this difficulty, by covering the roots about the body of the trees with wheat straw, when the ground is deeply frozen in winter. This process, by retarding vegetation, has secured them from the danger of the late frosts.

When, however, an intensely severe frost occurs late in winter, so as to freeze the germ of the fruit, which is developed very early, all expectation of a crop must be abandoned. This misfortune is easily verified, by an examination of the germ, when the embryo peach will be found black and blasted.

These observations are not set forth under the impression that they are new, for doubtless they are familiar to those enterprising farmers, who, by their successful cultivation, supply our city markets with this most healthy and delicious fruit;—such a universal favorite, that it would be an era in a lifetime, to find a man who did not like a peach. It is to be hoped that larger and more successful producers, may be induced to favor you with a detail of their mode of operations to the advantage of the agricultural community and the public at large, whose interests indeed are identical.

The writer had the pleasure of examining the extensive peach orchard of Major Reybold, near Delaware City, in the month of May; at which time that enterprising farmer had a prospect, as he stated, of about half a crop. It covered 120 acres of land, and contained 12,960 trees. His half a crop has produced 6,000 baskets, which have been chiefly sent to the New York market. A remarkable fact in connexion with the produce of this and the neighboring orchards, was mentioned by him and confirmed by several other gentlemen of that vicinity. A cold north-west breeze had prevailed during an afternoon while the trees were in bloom, which was accompanied in the evening by so severe a frost, that the total failure of the peach crop was anticipated. About 11½ o'clock at night the wind changed to south-east, which blowing over Delaware bay, so far modified by its mildness and moisture the air of that portion of the orchard which was nearest the water, and descended towards it, that the blossom was saved. The other portion of the same orchard, which inclined inland, and had received the full force of the cold blast, was almost a total failure.

From the healthy appearance and vigorous growth of many of my trees, I have a hope of securing a degree of longevity for them so desirable, considering the care and expense inevitable in their cultivation. Several of them are now about six inches in diameter, a foot from the ground, and the produce this year is estimated at from 30 to 40 bushels.

That peach trees are capable of attaining to considerable longevity, can be attested by many of your readers, who may remember them struggling for years in the hedge-rows of bushes, which were wont to adorn the fences of old fashioned farmers. There is now a tree in the garden of a lady in Arch street, Philadelphia, planted 25 years ago, which this season produced a good crop of fruit. William Cobbett, also, in his valuable little treatise, "The American Gardener," page 199, refers to a peach tree in France, in full bearing, as 50 years old.

MORRIS LONGSTRETH.

Valley Green.

USE OF CAMELS ON THE WESTERN PRAIRIES.

From the New Genesee Farmer.

Mr. Editor.—The writer of this is a native of Russia, and has spent many years of his life in that portion of the empire which borders on the Ural and Volga rivers, north of the Caspian sea.

I have, during the last two years, visited many parts of the United States; lately I have been in Missouri, Iowa and Wisconsin, and during my journeyings have had the fact strongly impressed on my mind, that the *camel* would prove a most valuable animal for burden in those prairies, and especially for traversing the country west even of the states I mention, where water is sometimes not found for days.

Camels used only for travelling possess great speed, and in the unsettled country would be found good to carry mails and convey intelligence. Their speed is great, 120 miles being a common day's travel for speedy animals.

Some individuals have expressed to me doubts of their being useful in this latitude. I mention the place of my birth only to show the most doubting, that in a more rigorous clime they are extensively used. The breeding of camels is not more expensive than horses.

You, no doubt, are informed with regard to this subject, and I am convinced can give to per-

sons desirous of breeding the camel, valuable information through the medium of your journal. They (the camel,) can be obtained on the Black sea, and if agricultural societies would import a few pairs, they would confer a great advantage on this country.

From 600 to 1000 pounds, with a rider, is a common load for the camel; and the commonest herbage, even weeds and twigs will suffice for their sustenance while enduring the severest labors.

I was advised by some gentlemen, to whom I casually mentioned this subject, to write to some editor of an agricultural paper of this matter, and being about to go to the east through Canada, have thought best to write to you from this place.

H. BOHLIN.

Buffalo, July 6th, 1842.

SHOEING THE HORSE.

From the Farmers' Cabinet.

Mr. Editor,—The remark of your correspondent at page 318 of your number for May, "That many of us transpose the order of our labors," reminds me of a mode adopted in the shoeing of the horse, which I once witnessed, and which is, I believe, of importance sufficient to deserve notice in the pages of your valuable and very interesting work. It occurred at the town of Croydon, near London, which is known as the centre of stag-hunt, so well attended by the whole country around, and especially by the high-bred bloods of London; and where may be seen a field of the best horses in the whole world—many of them worth their five or seven thousand dollars.

As I once passed through this town, one of my horses' shoes became loose, and I went to the shop of a smith named Lovelace, to get it fastened; the shoe was nearly new, and had become loose in consequence of the nails having drawn out of the hoof, although they had been clinched in the manner universally practised. The smith remarked that all the other shoes were loose, and would soon drop off, when I requested him to take them off and replace them; and then did I perceive the different mode which he adopted for fixing them, which I will here detail. As fast as he drove the nails, he merely bent the points down to the hoof, without, as is customary, twisting them off with the pincers; these he then *drove home*, clinching them against a heavy pair of pincers, which were not made very sharp; and after this had been very carefully done, he twisted off each nail as close as possible to the hoof; the pincers being dull, the nail would hold, so as to get a perfect *twist round* before it separated. These twists were then beaten close into the hoof and filed smooth, but not deep or with the view to rasp off the twist of the nail. "Oh ho!" said I, "I have learned a lesson in horse-shoeing," "Yes," said he, "and a valuable one; if I were ever to lose a single shoe in a long day's hunt, I should have to shut up my shop; my business is to shoe the horses belonging to the hunt, and the loss of a shoe would be the probable ruin of a horse worth, perhaps, a thousand pounds; but I never am fearful of an accident." "Simply, because you drive home and clinch the nails before you twist them off," said I—"Yes," replied he, "by which I secure a *rivet*, as well as a *clinch*." The thing was as clear as the light of day, and I have several times endeavored to make our shoeing-smiths understand it, but they connot *see* the advantage it would be to *themselves*, and guess, therefore, *it would never do in these parts*; but if my brother farmers cannot see how it works with half an eye, and have not the resolution to get it up into practice, they ought to see the shoes drop from the feet of their horses daily, as I was once accustomed to do. Now, let any one take up an old horse-shoe at any of the smiths' shops on the road, and examine the clinch of the nails which have drawn out of the hoof, and he will soon perceive how the thing operates. In short, if the nails are driven home before twisting off, and the *rivet* formed by the *twist* be not afterward removed by the rasp, I should be glad to be told how the shoe is to come off at all, unless by first cutting out the twist. I am, sir, a constant reader of the Cabinet, and one who has been benefited many dollars by the various hints which have been given in its pages.

J. S.

BUTTER MAKING IN NEW YORK.

From the Maine Cultivator.

Mr. Editor—Business led me to visit Goshen and Minisink, Orange Co., N. Y., in my late journey to that state, and knowing that it was noted through the union as a superior butter making country, I determined to learn every part of the process. I was surprised to find that after the milk is strained, every part of the process differs from ours.

First the keeping of the cows, especially in winter, is somewhat peculiar. When the land is laid down to grass, six quarts of *southern* clover, and as much herds-grass or timothy, is sowed on an acre. This ensures generally a very thick growth of rich pasturage or mowing land. They prefer the southern clover, because it is smaller than ours, and has the advantage, in that the second crop of the season is well seeded, and is the one from which the seed is gathered.

I am convinced from what I saw, that on the average not more than one half the quantity of grass seed is sown in Maine which should be.

They feed their *clover* hay to cows, and I was surprised to see how green they put it into the barn. They say they wish it to be *fermented*.

I visited Gen. Wickomb's yard, in Goshen, where I saw forty cows—all, or nearly all, grade animals of the Durham short-horned breed. Every cow has a separate stall, and outside door, made of three upright boards, with two open spaces, three inches wide, to admit air.

The barn is an L, with a southern aspect. Each door is numbered. In many of the yards I saw boxes for every four cows, made as follows: Four slit-work posts, 5 feet long, at each corner; four side boards, 12 to 15 inches wide and 6 feet long, nailed on so that the lower edge is 20 inches from the ground; a bottom is laid over at this lower edge. From the top of each post there is a board about 4 feet long, coming down on the side board like a brace, and nailed to it; of course there are

eight of these. This forms a place on each side for one animal to feed, and they cannot throw out the straw or hay, which is all put in the box, when the cattle are fed in the yard.

I have been thus particular, because I do believe it an important arrangement.

Some raise the sugar beet for winter use.

Now for the butter making. The milk is strained in pans or oaken tubs, holding two pails full. Every thing is done in the cellar. The milk is not meddled with until it *coagulates*, when each day's or each half day's milk is put in the churn, with nearly an equal quantity of cold water in summer, and warm water in autumn or winter, to bring it to the proper temperature, which is from 55 to 66 degrees of Fahrenheit.

The churn is made in the barrel form, of oak, hooped with iron, with a wooden hoop three inches wide at top, in which the cover rests. For six to ten cows, the churn should hold 30 gallons—and in that proportion for a larger number. I believe they rarely exceed two barrels, as in large dairies they prefer to churn several times a day, to the use of larger vessels.

Churning is never done by hand, except for a single cow. In small dairies it is done by a dog or sheep, on an inclined wheel, propelling the dash by very simple gearing. Those larger, have horse or water power. The motion can be communicated to the shaft and arm, elevating and depressing the dash a convenient distance from the moving power, by two wires. For a dog or a sheep, [the latter is preferred, both from economy and efficiency,) a wheel 8 feet in diameter, is inclined about 22° with the horizon, on which the animal is placed, having cleats nailed on to prevent his slipping. No other harness is required than a strap around the neck. His weight is sufficient to move the machine. On the upper side of this wheel is fastened a cast iron cog wheel or circular racket, 3 feet in diameter, which carries a pinion and crank. The wheel is often out door—sometimes in the cellar. It may be in a barn or shed, and the motion communicated by wires, as before stated.

When the butter begins to curdle, as it is called, all is washed down with another pail of water, and the motion continued till the butter gathers. Let it be remembered *the butter is never touched with the hands.* All is done with a short ladle, the blade of which resembles in shape the clam shell, and is five inches across at the end. The handle about five inches long.

The ladle and tray are always kept filled with cold water, when out of use, to prevent the butter from sticking to them.

The butter is worked and salted with the ladle in a tray. When it has stood long enough to become firm, after salting, all the buttermilk is worked out, and it is packed down solid in tubs of 40 or firkins of 80 lbs. If it cannot be made solid by the ladle, a pounder is used. When one churning is put down, a cloth is put on, covered with salt. This is taken off at each addition and replaced, until the tup or firkin is almost full, when half an inch of strong brine is poured over the cloth. Salt is never left between the layers.

They prefer *blown* to *ground* salt, because it is finer, and diffuses itself sooner and more perfectly through the mass; it requires a greater measure, but the same weight.

A churn used daily is cleansed twice a week. The tubs are prepared of oak or ash, and when wet rubbed thoroughly with as much fine salt as will stick on the inside.

Butter thus made and cured will keep for years in a cool place, and sells on an average fifty per cent. higher than butter made in the usual way in our state.

Cows average from 150 to 200 pounds a year, and the buttermilk is estimated to make 100 pounds of pork, which when it brought ten cents, paid all expenses of making the butter—*now*, only half.

Some churn over the buttermilk after standing one day and pouring off the water. One man who had ten cows, told me he made all the butter used in his family in this way, and had 20 lbs. on hand.

This letter may appear both too long and too minute. The subject is a most important one, and I insist on the truth of my assertion last winter, "that the same number of animals now kept, if the dairy were thus managed, would produce in this state 200,000 dollars more than they now do."

JAMES BATES.

Norridgewock, September 28, 1840.

SOWED CORN.

From the New England Farmer.

In 1839 and '40, I sowed corn in drills for *green fodder*. The last and the present year, sowed southern white corn *broadcast*, followed by the harrow and roller. August 6th, with a careful hand cut and weighed the corn on one square yard. The product gave at the rate of 52 tons and a fraction to the acre. August 19th, for the purpose of testing the correctness of the estimate made on the 6th, and also of satisfying myself what might be expected from ground in proper condition to plant for the grain—with a careful and judicious person to assist, we measured and weighed with much care, and found the production was at the rate of 65 tons and a fraction to the acre.

August 22d, cut and weighed	-	229 lbs.
Sept. 28th, the same weighed	-	71 "
Loss,		158

or 69 per cent.; giving, say 20 tons of *dry fodder* to the acre—which if well cured, is considered by some equal to 10 tons *upland* hay.

From one half acre I cut the *second crop*, which was estimated of sufficient value to defray expense of seed and labor for same.

Three bushels of seed, allowing some for the crows, is sufficient

It may be said that the quantity of ground measured was too small to make a correct estimate. I called the attention of my assistant to this point, who was satisfied that it gave a fair result, and one within the reach of any farmer.

GEO. DENNY.

Westboro', October 6th, 1842.

EFFECT OF THE GRAZING OF CLOVER ON ITS MANURING ACTION.

To the Editor of the Farmers' Register.

Agreeably to my promise, I send you the result of an experiment, which was commenced with a view to determine the value of clover as food for hogs, when cut and fed to them.

For this purpose eight pigs, of weights varying from fifty to seventy, were put in an enclosure, and one acre of clover accurately measured off, from a field containing about fifty.

This quantity of land was found more than equal to the supply of as much grass as they would consume; but their improvement while confined to clover alone, was not such as to justify the commendations which have been bestowed upon it.

The experiment, however, disclosed another result, as unlooked for as it was interesting. At the usual season the whole of the field was fallowed, and seeded in wheat. But a short time had elapsed before the boundaries of the acre which had been used for soiling were distinctly defined by the stronger and healthier appearance of the plant, compared with the growth on any other part of the field. The contrast indeed was so striking, that the fact excited a great deal of interest at the time, and various views were suggested to account for it. It was supposed by one, that this lot must have occupied the side of an old garden; and on inquiry, it was ascertained that the former garden did extend over a part, but a very inconsiderable portion of it.

A second ascribed the difference to the great benefit arising from keeping land clean. This circumstance no doubt exerted considerable influence, but did not account for an equal difference in the succeeding crop of clover.

A third suggested it might be owing to the circumstance, that the clover in the one case had been cut at or before the period of flowering, while in the other it had been allowed to arrive at maturity and ripen its seed.

The following extract, from Chaptal's Agricultural Chemistry, would seem to confirm the latter view. He observes that "all farmers know that when they subject to tillage a piece of artificial grass land, which has for several years been constantly mowed at the time of flowering, it will yield several harvests without any dressing; but if the grass has been left to go to seed, it will be necessary to supply the earth with manure, before it will yield a good return."

Thus it appears that clover and the other artificial grasses are eminently fertilizing, if cut at or before the period of flowering, but if allowed to mature their seed, an opposite character must be bestowed, even should the whole of their products be returned to the soil. Plants, it should be borne in mind, are limited to the exercise of two functions, those of nutrition and reproduction, the first being subservient to the second. Here it would seem to be a fair inference, that unless we interpose and avail ourselves of the results of the first, or nutritive stage, the plants will soon enter upon a new series of actions, and appropriate all that is valuable, not to provide for those of a different family, but to perpetuate the species.

WILLIAM L. WIGHT.

Goochland, October 13th, 1842.

THE FLOATING ISLAND IN DERWENT LAKE, NEAR KESWICK, (ENG.)

From the Philadelphia Ledger.

This most extraordinary phenomenon, which has given rise to a multiplicity of opinions as to its cause and properties among geologists and others, including Professor Sedgwick, having again made its appearance, it is apprehended that a short account of it will not only prove amusing to the readers of this paper, but also be interesting to the scientific world generally.

It is situated not far from Lowdore, at the south-east extremity of the lake, and a little more than 150 yards from the land, where the depth of the water does not exceed six feet in a mean state of the lake.

During the last 40 years it has appeared 13 times. In the year 1808, from July 20 to the beginning of October in the same year; in 1813, from the 7th of September to the end of October following; in 1815, from August 5 to the end of the month; in 1819, from August 14 to the end of the same month; in 1824, from June 21 to the end of September; in 1825, it was above the water from the 9th to the 23d of September; and from the 11th July to the end of September in 1826. "The circumstance of its appearing in three successive years," says Mr. Otley, "may be attributed to the extraordinary warmth of the season." It made its appearance again on the 10th of June, 1831, and remained uncovered until the 25th of September. In 1834 and 1835 it was visible for a few weeks in August and September. In 1837 it appeared in July and August. It appeared again on the 19th July, 1841, and remained till the end of August. And it made its appearance in the latter end of last or the beginning of the present month (September,) but it is not yet quite so large as on some of the former occasions of its appearance.

We will not undertake to investigate the great number of hypotheses which have been advanced relative to the cause of this singular phenomenon, nor examine into any of the arguments which have been adduced, but will merely give the opinion of Mr. Otley, who is well versed in the geological and meteorological properties of the lake district, who is resident at Keswick, and who for the last 30 years has watched with much attention the operations of it. Mr. Otley says—

"That it generally rises after an interval of a few days, and after a continuance of fine weather. Its figure and dimensions are variable; it has sometimes contained about half an acre of ground, at other times only a few perches; but extending in a gradual slope under water, a much greater portion is raised from the bottom than reaches the surface of the lake. Several large rents or cracks may be seen in the earth about the place, which appear to have been occasioned by its stretching to reach the surface.

"It never rises far above the level of the lake, but having once attained the surface, it for a time fluctuates with the rise and fall of the water, after which it sinks gradually. When at rest in the bottom of the lake it has the same appearance as the neighboring parts, being covered with the same vegetation, consisting principally of litterella lacustris and lobelia dorimanno, inter-

spersed with isoetes lacustris, and other plants common in this and all the other neighboring lakes; after remaining some time above the water its verdure is much improved. For a few inches in depth it is composed of a clayey or earthy matter, apparently deposited by the water, in which the growing plants have fixed their roots; the rest is a congeries of decayed vegetable matter, forming a stratum of loose peat earth, about six feet in thickness, which rises from a bed of very fine soft clay. A considerable quantity of air is contained in the body of the island, and may be dislodged by probing the earth with a pole. This air was found by Dr. Dalton to consist of equal parts of carbureted hydrogen and azotic gases, with a little carbonic acid."

Mr. Otley farther adds—

"That one material circumstance has, however, generally escaped observation—namely, that the air to which the rising of this island has been attributed is not collected in a body underneath it, but interspersed through the whole mass. And the most probable conclusion seems to be, that air or gas is generated in the body of the island by decomposition of the vegetable matter of which it is formed; and this gas being produced most copiously, as well as being more rarefied in hot weather, the earth at length becomes so much extended therewith as to render the mass of less weight than an equal bulk of water. The water then insinuating itself between the substratum of clay and the peat earth forming the island, bears it to the surface, where it continues for a time, till partly by escape of the gas, partly by its absorption, and partly by its condensation consequent on a decrease of heat, the volume is reduced, and the earth gradually sinks to its former level, where it remains till a sufficient accumulation of gas again renders it buoyant. But as the vegetable matter of which the island is principally composed appears to have been amassed at a remote period, when the lake was of less depth than at present, receiving very little addition from the decay of plants recently grown upon the spot, it is reasonable to suppose that the process of furnishing the gas cannot from the same materials be continued *ad infinitum;* but there must be a time when it shall have arrived at its maximum, after which the eruptions will become less extensive or less frequent."

ON A METHOD OF DESTROYING THE CANKER WORM GRUB.

By John Porter, esq., Newburyport, Mass.

From the Magazine of Horticulture.

Having seen, in your valuable magazine for this month, an article describing the best method for the destruction of the canker worm, I am induced to state the result of an experiment made by myself. The trees on which I tried the experiment had been exposed for five or six years to the ravages of the grubs, without taking any steps to prevent them; and therefore it is fair to infer that the ground contained a bountiful supply for their future operations.

Around each tree I placed a square box, about twelve or fourteen inches high, made of rough boards, leaving a space of four or six inches between the box and the tree. A ledge of about two inches in width was nailed entirely round the top of the box, and the box was inserted two or three inches into the ground, for the purpose of keeping it steady. On the outside of a box, and under part of the ledge, I tarred frequently, and the grubs were thus prevented from ascending from the outside. I filled the inside of the box about two-thirds full of cotton waste (which can be obtained at any cotton manufactory for a cent per pound, or less,) well pounded down, and this effectually prevented them from ascending from the inside. If, however, a few grubs should succeed in getting over the tar from the outside, they have to descend the inside of the box until they reach the cotton waste, and crawl over that until they reach the tree. This they cannot do, as they immediately become entangled by the cotton, and cannot proceed. I have tried this two years in succession, and I have not had a worm on trees, which, for several years previous, had been entirely denuded by this enemy of the apple tree.

The expense is very trifling, as any common boards will answer, and any person who can use a fore-plane, a saw, and a hammer, can easily prepare the boxes.

No possible injury can result to the tree, for the tar does not touch it; and as soon as the season is over for the grubs to ascend, I remove the waste, and spread it to dry for another season, and in this way it will answer for use several years.

I feel entirely satisfied that the foregoing plan will effectually put an end to the ravages of the detestable grub-worm, and I hope that all those who have trees worth preserving, will try the experiment.

THE OHIO EVER-BEARING RASPBERRY.

By A. H. Ernst, Nurseryman, Cincinnati, Ohio.

From the Magazine of Horticulture.

Last spring I had occasion to send a few things to some friends in your vicinity. I availed myself of the occasion to present you with one dozen of the Ohio ever-bearing raspberry plants, which I hope you have received.* I feel some desire to aid in spreading this fruit over the country; less, however, to the *north* than to the *west* or *south*, because your region is more congenial with the growth of the raspberry, and abounds in fine high flavored fruit, of superior quality, which continues to fruit abundantly during the latter part of the summer, so that, to a great extent, the deficiency does not exist with you, which would make this raspberry particularly valuable to your section of country.

The Ohio ever-bearing raspberry, as you are aware, is a native of Ohio. It was, I think, first found and brought into notice by a community of Shakers, residing some thirty miles north-east of this city, from whence, from the best evidence I can procure, it has been very slowly spread into this city and vicinity. To my mind it is valuable

* We did, in excellent order, and Mr. Ernst will receive our thanks for his attention.—*Ed. Mag.*

as a constant bearer; it has none of those claims, however, for superior size and flavor, set up for it. With me, it commences bearing, and ripens its fruit, with most other varieties, in June, which is full and abundant, when it continues to send up a succession of strong and vigorous shoots from the roots of the old plant, which keep up a succession of bloom and maturing fruit the remainder of the summer, not however so profusely as the first fruiting, though of larger size, and, I am inclined to think, of better flavor. This circumstance is, perhaps, owing to the fact, that there is less rain and more sun in the latter part of summer than in June. The fruit is black, strongly resembling the black raspberry of our hills and mountains in size and flavor, and, like it, propagates itself from the ends of the new shoots, which branch just below the cluster of fruit, on the end of the same; those branches grow beyond the cluster of fruit, and bend themselves over to the ground, and again fork, near the end, into several parts; on the ends of these sub-branches roots are formed, which fasten themselves into the ground, and thus form new plants. The roots of the mother plant continue to increase in size and strength, throwing up a greater succession of fruit-bearing stems to occupy the place of the first bearers, which invariadry up after they have performed the office of producing one crop of fruit.

When I say it has no claims to the high reputation for flavor set up for it by some of the writers who have noticed it, I do not mean to be understood as denying it all claim to the same, I only wish to correct what I believe, with due deference to the tastes and judgments of the respectable gentlemen who have written on this valuable fruit, to be an error. My desire is to do it justice, and I think this will be found to be ample, on trial, to recommend it to the favorable attention of the public, and to occupy a conspicuous place in the fruit department of every well selected collection. It cannot fail to prove a valuable kind in the vicinity of all large cities, as a market fruit. To give you some idea of the productiveness of this plant, I counted 105 *berries* in their various stages on the end of *one stem*, forming *one cluster*.

Considerable has already been written on this valuable fruit, but if you think the above will tend to promote its dissemination, and be of interest to your readers, you are at liberty to publish it in your useful magazine.

NEW-ENGLAND BANKING.

Some of the Philadelphia papers are highly extolling the New-England banking system, the conductors thereof being apparently ignorant that it is *in principle* essentially the same as is in the other states, though *the practice* under it is somewhat different. If it has done less harm in New England than in other parts of the union, it is owing to the superior wariness of the New-England character, and owing to circumstances there being less favorable to the display of such financial skill as has raised Pennsylvania and some other states into an unenviable kind of notoriety.

The wariness of the New-England character, has led the people of that part of the country to eschew the branch bank system. The stock of each bank is owned chiefly by the inhabitants of the village in which it is situated, and the bank is generally managed by those who have a deep interest in keeping the capital sound. In this respect the New-England system of banking is far preferable to that which prevails in Virginia and some other states.

The same wariness of character has led the New-England men to a prompt settlement of bank balances.

In New-England, real capital is more abundant in proportion to the means of employing it than in other parts of the union. There is consequently less opportunity for the display of financial skill by operating on what is called "factitious capital."

In New-England, moreover, every thing is in a settled state compared with most other parts of the country. Society there is fifty years older than it is in Pennsylvania, and a hundred years older than it is in some of the other states. Paper money banking naturally leads to the greatest excesses, in those parts of the country the natural resources of which are in a rapid state of developement, as in Illinois and Mississippi. It is comparatively moderate in its action in long established, well compacted communities.

In the many crises which we have passed through, New-England has enjoyed great advantages, through New York, Philadelphia, and Baltimore, being guaranties in a manner of the sales of goods she made to the south and west. Besides this, New-England was less exposed than other parts of the union to the deleterious influences of the United States Bank.

Notwithstanding all this, paper money banking is operating on society in New-England like a subtle poison, and so those New-Englandmen as have carefully and candidly inquired into the system are well convinced. One of the most intelligent of the merchants of Boston told us not long since, that when he first read our History of Banking, he thought we had exaggerated the evils of the system, but subsequently observation had convinced him that our representations fall short of the awful reality.

In the state of New Hampshire, which contains fewer inhabitants than the city of New York, and not many more than the city and county of Philadelphia, upwards of one thousand persons have applied for the benefit of the bankrupt act. This fact alone shows that there is something radically wrong in the currency and credit system of New-England.

Nothing but gross ignorance, or inveterate prejudice, or a strong desire to speculate on the rest of the community through some new modification of the paper money system, could ever induce a man to offer New-England banking as a model for the rest of the union. It is, we repeat it, in its *principles*, essentially the same as that which has ruined Mississippi and Michigan, and disgraced Pennsylvania.—*Gouge.*

AGRICULTURAL LETTER FROM GEN. WASHINGTON TO HIS OVERSEERS.

From the Farmers' Gazette.

We are indebted to the kindness of an old friend for the following valuable document; valuable not only because of the revered source from which it emanates, but because it affords many excellent lessons from an able and practical farmer; it is too strongly characteristic of the American hero. We see here the exercise in private life of that attention to detail, that inflexible devotion to order and discipline, which so eminently mark the public character of Washington. No one can read this letter without seeing at once that the writer was an industrious, sound, *practical* farmer. He, whose indomitable energy had given freedom to a world, did not esteem the most minute details of agriculture unworthy his attention.

It will probably surprise the reader to find Gen. Washington insisting upon the use of harrows and cultivators in the cultivation of his corn; this we have been accustomed to plume ourselves upon as a much more modern invention.

This letter, directed to his overseers, is taken from the manuscript copy in Washington's own hand writing, and as we are informed, now appears in print for the first time.

Philadelphia, 14*th July*, 1793.

Gentlemen.—It being indispensably necessary that I should have some person at Mount Vernon through whom I can communicate my orders; who will see that these orders are executed; or, if not obeyed, who will inform me why they are not; who will receive the weekly reports and transmit them; receive money and pay it; and in general to do those things which do not appertain to any individual overseer—I have sent my nephew, Mr. Howell Lewis, (who lives with me here,) to attend to them until I can provide a manager of established reputation in these matters. You will, therefore, pay due regard to such directions as you may receive from him, considering them as coming immediately from myself. But that you also may have a general knowledge of what I expect from you, I shall convey the following view (which I have of the business committed to your charge) as it appears to me, and direct you to govern yourself by it: as I am persuaded nothing inconsistent therewith will be ordered by Mr. Lewis, without authority from me to depart from it.

1st. Although it is almost needless to remark that the corn ground at the farm you overlook ought to be kept perfectly clean and well ploughed—yet, because not only the goodness of that crop depends upon such management, but also the wheat crop which is to succeed it, I cannot forbear urging the propriety and necessity of the measure in very strong terms.

2d. The wheat is to be got into the barns or into stacks as soon as it can be done with any sort of convenience, that it may not (especially the bearded wheat, which is subject to injury by wet weather,) sustain loss in shocks—and because the shattered grain in the fields may be beneficial to the stock; but no hogs are to be put on stubble fields in which grass seeds were sown last fall, winter or spring; other stock, however, may be turned on them, as it is rooting that would be prejudicial.

3d. The whole swamp, from the road from Manley's bridge up to the lane leading to the new barn, is to be got into the best and most complete order for sowing grass seeds in August—or, at the farthest, by the middle of September. The lowest and wettest part thereof is to be sown with timothy seed alone. All the other parts of it are to be sown with timothy and clover seeds mixed. The swamp on the other side of the aforesaid lane (now in corn and oats) is to be kept in the best possible order, that the part not already sown with grass seeds, may receive them either this autumn (as soon as the corn can be taken off with safety) or in the spring, as circumstances shall dictate.

No exertion or pains are to be spared at Pague-run to get the swamp from Manley's bridge up to the meadow above, and the two enclosures in the mill swamp, in the highest order for grass, to be sown in the time and manner above mentioned. But that no more may be attempted than can be executed well, proceed in the following order with them, accordingly as the weather may happen to be, for this must be consulted, as dry weather will answer to work in the low parts best, whilst the higher grounds may be worked at any times.

1st. Begin with the swamp from Manley's bridge upwards, and get all that is not already in grass well prepared for it, and indeed sown. 2d. That part of the lower meadow on the mill run, which lies between the old bed of it and the race, and within the fences. 3d. After this is done, take that part in the enclosure above (which was in corn last year) lying between the ditch and fence of No. 1, up and down to cross fences. 4th. Then go over the ditch and prepare slipe after slipe as the ditch runs from the one cross fence to the other, and continue to do this as long as the season will be good, or the seed can be sown with propriety and safety.

I conceive that the only way to get these grounds in good order and with expedition, is to give them one good ploughing and then to tear them to pieces with heavy harrows. Whether it be necessary to cut down and take off the weeds previous to these workings can be decided better by experiments on the spot than by reasoning on it at a distance. My desire is that the ground shall be made perfectly clean, and laid down smooth; without which meadows will always be foul—much grass left in them, and many scythes broken in cutting what is taken off.

4th. The buckwheat which has been sown for manure ought to be ploughed in the moment a sufficiency of seed is ripe to stock the ground a second time; otherwise, so far from its answering the purpose of manure, it will become an exhauster. For this reason, if the ploughs belonging to the farm are unable to turn it in time, those of Muddy hole, Dague run and Union farm must combine to do it, the work to be repaid by the farm which receives the benefit, as soon as the work is accomplished thereat.

5th. Where clover and timothy seeds are mixed and sown together, allow five pints of the first, and three of the latter to the acre; and where timothy only is sown, allow four quarts to the acre. Let the seed be measured in the proportions

here allotted and put into a half bushel, and the half bushel filled with sand or dry earth, and extremely well mixed together in your own presence or by yourself, which will answer two good purposes, viz.: 1st, to prevent theft, for seeds thus mixed, would not sell—and 2dly, the seedsman being accustomed to sow a bushel of wheat to the acre would be at no loss to cast a bushel of this or any thing else, regularly on that quantity of ground.

6th. It is expected you will begin to sow wheat early in August, and in ground perfectly clean and well ploughed. I would have, and do accordingly direct, that not less than five pecks of seed be sown on each acre. The plan of the farm over which you look is given to Mr. Lewis, from which the contents of each field may be known. And it is my express direction that every watch and the best attention may be given, to see that this quantity actually is put in; for I have strong suspicions (but this ought not to be hinted to them) that the seedsmen help themselves to a pretty large toll.

7th. As soon as you have done sowing, and even before, if it can be done conveniently, you are to set heartily about thrashing or treading out the wheat; and as fast as it is got out, to have it delivered at the mill or elsewhere, according to directions. The longer this business is delayed, the more waste and embezzlement will there be of the crop. The wheat is to be well cleaned; the chaff and light wheat are to be properly taken care of for the horses or other stock—and the straw stacked and secured as it ought to be against weather and other injuries; and until the whole be delivered it will require your constant and close attention.

8th. The oats at the farm you overlook are, I presume, all cut; in that case, let all the scythes, and cradles, and rakes which you have received, be delivered over to the mansion house; or if you choose to keep them against next harvest, you must be responsible for them yourself.

9th. The presumption also is, that the flax is, ere this, pulled; let it be well secured, and at a proper season stripped of its seed and spread to rot. During this operation let it be often turned and examined, that it be not overdone, or receive injury in any other respect by lying out too long.

10th. Get the cleanest and best wheat for seed, and that which is freest from onions. I would have about one third of my whole crop sown with the common wheat; one third with the white; and the other third with the yellow bearded wheat. The overseers (with Davy, as he knows the state of his own farm and the quality of the wheat which grows upon it,) may meet and decide among themselves whether it would be best to have some of each of these sorts on every farm; or, in order more effectually to prevent mixture, to have one sort only on a farm. In the latter case, the cutting of that which ripens first, and so on, must be accomplished by the force of all the farms, instead of each doing its own work. If the seed on one farm was to be sown on another, especially if seed which grew on a light soil was to be sown on a stiff one; and that which grew on a stiff one sown on light ground, advantages would unquestionably result from it.

11th. The potatoes at the mansion house must be worked by the ploughs from Union farm, and when this is required, it would be best, I conceive, to accomplish the work in a day.

12th. It is expected that the fences will be made secure, and no damage permitted within them by creatures of any kind or belonging to any body—mine any more than others.

13th. The greatest attention is to be paid to the stocks of all kinds on the farms; and the most that can be made of their manure and litter.—They are to be counted regularly, that no false report may be made; and missing ones, if any, hunted for until found, or the manner of their going can be accounted for satisfactorily.

14th. A weekly report, as usual, is to be handed to Mr. Lewis. In this report, that I may know better how the work goes on, mention when you begin to plough, hoe, or otherwise work in a field, and when that field is finished. The increase, decrease and changes are to be noted as heretofore—and let me ask

15th. Why are the corn harrows thrown aside, or so little used that I rarely of late ever see or hear of their being at work? I have been run to very considerable expense in providing these and other implements for my farms: and to my great mortification and injury, find, generally speaking, that wherever they were last used there they remain, if not stolen, till required again; by which means they, as well as the carts, receive so much injury from the wet weather and the heat of the sun as to be unfit for use; to repair or supply the place of which with new ones, my carpenters (who ought to be otherwise employed) are continually occupied in these jobs. Harrows, after the ground is well broken, would certainly weed and keep the corn clean with more ease than ploughs. I hope, therefore, they will be used. And it is my express order that the greatest care be taken of the tools of every kind, carts and plantation implements, in future—for I can no longer submit to the losses I am continually sustaining by neglect.

16th. There is nothing I more ardently desire, nor indeed is there any more essential to my permanent interest, than of raising of live fences on proper ditches or banks; yet nothing has ever been, in a general way, more shamefully neglected or mismanaged; for, instead of preparing the ground properly for the reception of the seed, and weeding and keeping the plants clean after they come up—the seeds are hardly scratched into the ground, and are suffered to be smothered by the weeds and grass if they do come up: by which means the expense I have been at in purchasing and sending the seeds (generally from Philadelphia) together with the labor, such as it is, that has been incurred, is not only lost, but (and which is of infinite more importance to me) season after season passes away and I am as far from the accomplishment of my object as ever. I mention the matter thus fully to show how anxious I am that all those seeds which have been sown or planted on the banks of the ditches should be properly attended to; and the deficient spots made good, if you have or can obtain the means for doing it.

17th. There is one thing I must caution you against (without knowing whether there be cause to charge you with it or not)—and that is not to retain any of my negroes who are able and fit to work in the crop, in or about your own house, for your own purposes. This I do not allow any

overseer to do. A small boy or girl, for the purpose of fetching wood or water, tending a child, or such like things, I do not object to; but so soon as they are able to work out I expect to reap the benefit of their labor myself.

18th. Though last mentioned, it is not of the least importance, because the peace and good government of the negroes depend upon it—and not less so my interest and your own reputation. I do, therefore, in explicit terms, enjoin it upon you to remain constantly at home, (unless called off by unavoidable business or to attend Divine worship,) and to be constantly with your people when there. There is no other sure way of getting work well done and quietly by negroes; for when an overlooker's back is turned the most of them will slight their work, or be idle altogether. In which case correction cannot retrieve either, but often produces evils which are worse than the disease. Nor is there any other mode but this to prevent thieving and other disorders, the consequence of opportunities. You will recollect that your time is paid for by me, and if I am deprived of it, it is worse even than robbing my purse, because it is also a breach of trust, which every honest man ought to hold most sacred. You have found me, and you will continue to find me, faithful to my part of the agreement which was made with you, whilst you are attentive to your part; but it is to be remembered, that a breach on one side releases the obligation on the other. If, therefore, it shall be proved to me that you are absenting yourself from the farm or the people without just cause, I shall hold myself no more bound to pay the wages than you do to attend strictly to the charge which is entrusted to you by one who has every disposition to be your friend and servant,

GEO. WASHINGTON.

MARL AND SOFT LIMESTONE OF SOUTH CAROLINA. "CHALK HILLS" IMPROPERLY SO CALLED. NEW JERSEN GREEN SAND.

[The inquiries in regard to South Carolina, which drew forth the following letter, will be sufficiently set forth by the answers. One of our inquiries was caused by information very lately received as to the existence of what was called "chalk" in large quantities near Hamburg. This we supposed to be indurated and very pure marl, or soft lime-stone; but it appears from Mr. Vanuxem's letter that the earth in question is merely a clay, containing no calcareous matter. In correcting this mistake, (under which we know that some intelligent persons still remain,) as well as in the statements of the localities and kinds of actual calcareous deposites, this letter may be valuable to many persons in South Carolina; and this we trust will excuse us to the writer for publishing it without any omission, or alteration of form as he mentioned, but which we did not deem necessary. One change of form only we would have desired, but could not always supply—and for the want of which we fear injustice may be done the writer's meaning in some minor respects. Because of the haste of the writing, some of the words of the letter were illegible, and possibly their equivalents may not have been rendered by substitution in the printing.—ED. F. R.]

To the Editor of the Farmers' Register.

Bristol, October 8th, 1842.

Dear sir,—I read your letter of the 28th ultimo, and a few pages of the Farmers' Register, containing an account of your visit to some parts of the "marl" region of New Jersey, which I have read with interest. In reply to your letter requesting a copy of the report on the geology of South Carolina, I regret that I cannot lay my hands upon the two only copies which I have, one of which you would be welcome to, though it would not give you any of the information you seek, as it was the report of a short season, and relates only to the west part of the state, which is entirely in the primary region, and the opposite extreme of the "calcareous marl" region. The report, like all the legislative documents of that state, was published only in the two newspapers of Columbia, which is one of the reasons why that survey is so little known. The region which contains the "soft lime-stone," makes its appearance generally, from about twenty to thirty miles east of the mail route through Cheraw, Camden, Columbia and Hamburg, extends to near the seacoast, the "soft limestone" appearing at the surface at intervals in that part of the state, from not being a homogeneous deposite, from being covered with newer deposites, and from the underlying or "green-sand" deposite appearing also in that belt of country, as for example at Mars' Bluff, on Pee Dee river, Waccamaw river, in Horry district, Effingham's mill, near Eutaw Springs, on Santee river, and (if Bartram can be relied upon,) in the river at Silver Bluff, below Augusta or Hamburg, which place I visited, but could not find what he discovered, though the water might have been unusually low when he was there. The localities of "soft limestone" which I visited were but few in number. The first was Dr. Jameson's quarry, on the road from Orangeburg court house to McCord's ferry on the Santee. It is very white, has the appearance of a hard chalk, is burnt for lime, and is among the purest which I examined, containing 91.6 carbonate of lime, 8.4 of argile [the pure matter of clay] chiefly. It abounds in the *ostrea selliformis*.

The same but not so white was also burnt for lime on Mr. Darby's plantation in St. Matthew's parish. Two specimens were examined, one gave—

Carbonate of lime - - -	90.4
Argile and oxide of iron - -	9.6

The other, which was purer,

Carbonate of lime - - -	92.2
Argile and oxide of iron - -	5.8

Among some of the other localities which came under my notice, and from which I received specimens, but did not visit, were Eutaw springs, Godfrey's ferry on the Pee Dee river, Swain's ferry on the Edisto, Santee canal, &c. One of the finest expositions of the "soft limestone" and which will one day be of great value for agricultural

purposes, from its position, mass and exposition, is Shell Bluff on the Savannah river. It rises abruptly from the edge of the river, (and is about 25 miles below Augusta, on the Georgia side.) The height judged to be above fifty feet. In a section which I made of the bluff near 16 or 17 years ago, I divided the calcareous mass into 14 parts or portions, one resting upon the other, the whole being covered with a red earth, usually sandy, and which is common to most of the seaboard portion of the states south of the Chesapeake. Specimens from each of these 14 divisions were examined for that part only combined with carbonic acid, the impurities being considered of no practical moment; and from position and some slight examination, the part combined with the acid is believed to be lime, and lime only. The results probably may be of advantage to some of the readers of your Register and they are given, having never been published.

No. 1. Commencing at the water line, two specimens, one from the lower part gave
- Carbonate of lime - - - - 47.2
- Sand and argile - - - - 52.8

The other from the upper part
- Carbonate of lime - - - - 71.6
- Light yellow argile very plastic - - 28.4

No. 2. Mass of comminuted shells:
- Carbonate of lime - - - - 73.2
- Argile and some course sand (transparent) - - - - - - - 26.8

No. 3. Similar mass (with disintegrated shells:
- Carbonate of lime - - - - 62.4
- Coarse silicious sand and yellow clay 37.6

No. 4. Similar mass:
- Carbonate of lime - - - - 73.2
- Coarse sand and yellow argile - - 26.8

No. 5. Bed about 6 inches thick, distinctly observed in the bluff:
- Carbonate of lime - - - - 37.2
- Light olive colored argile and fine and coarse sand - - - - - 62.8

No. 6. Comminuted shells, &c., and occasionally an entire one:
- Carbonate of lime - - - - 47.2
- Glassy sand and yellow argile - - 52.8

No. 7. The same:
- Carbonate of lime - - - - 85.2
- Glassy sand and yellow argile - - 14.8

No. 8. The same. More arenaceous:
- Carbonate of lime - - - - 54 4
- Glassy sand and ochery argile - - 45.6

No. 9. Earthy or marly:
- Carbonate of lime - - - - 80.4
- Same kind of sand, argile or clay - 19.6

No. 10. Very thick bed:
- Carbonate of lime - - - - 64.4
- Glassy sand and whitish argile - 35.4

No. 11. In nodules and large flat masses:
- Carbonate of lime - - - - 93.4
- Yellowish white argile - - - 7.6

No. 12. Comminuted shells, &c., with occasionally a large oyster:
- Carbonate of lime - - - - 83.2
- Coarse sand and yellow argile, very tenacious - - - - - 16.8

No. 13. Abounds in impressions of tertiary shells but the shelly part remained:
- Carbonate of lime - - - - 77.6
- Ferruginous argile, very soft - - 22.4

No. 14. Upper part of the calcareous bluff abounds in large ostrea which are collected and burnt for lime. Bed about 6 feet thick. I did not analyze their matrix, but have no reason to believe that it varies from those immediately below it.

Having given you as much information as I have at hand, in relation to the "soft calcareous region," and believing it to be to the purpose for which you write, I will now pass to the next item of your letter, namely, the supposed chalk hills, near Hamburg, in South Carolina. This chalk is a remarkably pure clay, as to color and composition, for its position and mass, and is found at intervals from Long Island to Florida, but usually associated with red clay, forms the mass which you may have seen at Fort Washington on the Potomac. It is in greater body, and a finer white, between Columbia and Augusta, than I have elsewhere noticed it. It would be a porcelain earth were it not for a yellow tinge which it exhibits when burnt, owing to oxide of iron, from which it requires only to be free to rank with that substance. Through the region where it exists, its hillocks are called chalk hills. It occurs always near the line of the primary range going from the ocean, and appears to have been derived from the decomposition of the feldspar of the granite, which from Virginia south is the prevailing seaboard primary rock. To the south the clay is usually covered with a red ferruginous earth, with coarse sand, which is an abundant sub-soil along the southern mail route, and for some distance to the east of it, being often covered with white coarse hyalic or glassy quartz sand, the common sand of the Atlantic region.

I regret that when in Philadelphia you did not visit me. I should greatly have been pleased to have made your personal acquaintance, to have shown you our loamy soils upon which lime acts so beneficially, and to have accompanied you into some of the more eastern marl regions of the state than those you visited. I should like to have had some conversation with you upon the improvement of soil, for little can be given in a letter in comparison with oral communication. Your paper in the pages of the Farmers' Register adds more proof to the opinion which I entertain and entertained, of the action of New Jersey "marl," that it is not a specific, (hence potash is not the fertilizing principle, as asserted,) but acts favorably only under certain circumstances. Thus the gunpowder variety, whose particles are evident, is valuable when applied to stiff, or adhesive, or wet soils, whilst the coherent ones are beneficial upon the more open and sandy ones, as you instanced on some of the farms in Gloucester county. It is more easy for me to generalize, or find a final cause than a proximate one, for *New Jersey marl*, namely, that all production whatever is the result of difference, and that production ceases so soon as all differences are removed or cease; hence, with me, rotation is the first and essential element in all good farming, being in accordance with the whole plan of creation, as developed in geology and revelation. One thing prepares the way for another—an order of succession having been established from all eternity. Take a worn-out field in this section of country, where no wheat has been grown for twenty years, and with a little manure it will yield 25 bushels to the acre; whereas previously it would not produce ten with

the same manure. When abandoned it would produce nothing but weeds, and finally coarse or stunted grasses; for the light particles of soils having been carried below by the action of rain, which leaves only the coarser ones upon the surface, some other grasses appear, and these prepare the soil to again yield wheat, which without lime, manures, and a certain succession, the land would again become unproductive to the cultivator. I find on my farm, that whatever I put on it that is foreign to the soil, and is not poisonous, improves it either directly or indirectly. Hence the great advantage of continuously deeper ploughing, which I have practised from the beginning now twelve years. It is certain that change is good for man and the whole class of animals; it is so for plants, and for soils to be productive they must undergo a change likewise; and thus mixtures of earths, manures, green crops, saline substances to act as condiments or stimulants, gaseous absorbents, like charcoal, &c., are beneficial. In a paper which was published in the Journal of the Academy of Philadelphia, 1828, I there mentioned that the marl of New Jersey and Delaware yielded but an inconsiderable portion of carbonate of lime, and that it appeared to owe its fertilizing property to a small quantity of iron pyrites, which passes to sulphate of iron by exposure to the air, and also to animal matter, to its color, and to its effects, when mixed with sand, of diminishing the calorific conducting power of the latter. I was then not aware of the potash which was contained in it, or should have noticed it.

In the Report which I recently published, in Albany, under the head of "soils," are these words: "Certain earthy mixtures which contain no nutriment, such as the marl of New Jersey, possess a highly fertilizing quality, the efficient cause of which is yet unknown, for it cannot be the potash contained therein, as was formerly supposed, since in that case micaceous or primary soils would be more productive than they are. Too little attention, it seems to me, has hitherto been given to the effects developed by the action of the sun's rays on different colored particles in the soil: the white particles producing reflection in excess, may give rise to a repellent force; while the darker colored ones, being less reflective, receive the full influence of the calorific ones, and thereby evolve that force connected with combination. By the assiduous study of the law of these two forces which have a close analogy to the powers of life, we would probably do more to remove the difficulty in question, than by following any course hitherto pursued."

With respect to potash, I must state that in a more recent conversation with Professor Booth he informed me that carbonic acid would separate the alkali from the marl, which consequently gives the marl an advantage over micaceous soils, as respects potash, the mica requiring a much stronger acid to act upon it.

This letter is written as a kind of interchange for what you sent me. Should any part other than those which are a reply to your letter be of use to you as an editor, they are at your service, but will require your aid to be fitted for publication. The information you ask for, I take for granted you wish to publish, though that may require some alteration as to manner. With great respect,

LARDNER VANUXEM.

To the Editor of the Farmers' Register.

A STATEMENT OF THE NUMBER OF ACRES OF LAND WHICH HAD BEEN MARLED IN THE COUNTY OF KING WILLIAM, AT THE TIME OF TAKING THE CENSUS IN 1840.

Showing the amount marled by each person.

ACRES.	ACRES.	ACRES.	ACRES.	ACRES.
16	150	40	100	230
100	200	1	60	30
40	5	1	180	440
150	6	600	20	15
2	35	300	35	63
50	12	100	10	12
100	50	80	30	85
80	20	50	20	750
30	60	100	25	100
300	300	300	75	150
100	4	60	75	150
10	400	50	200	100
20	5	12	170	50
14	75	2	20	30
300	115	30	10	15
75				

Total 7800 acres.

A true copy, from the books of George N. Powell, the person by whom the census was taken in 1840. HARDIN B. LITTLEPAGE.

In addition to the above amount, the following persons were not enumerated:	7800 acres.
Maj. Dabney, up to 1840, had marled	40
James Fox, Upper Farm, - -	400
" " Queenfield, - -	150
Mr. Latanè - - - - -	100
Mr. Berkeley, - - - -	100
Wm. Ryland, - - - -	15
Mrs. S. Tuck, - - - -	20
Edward Hill, - - - -	40
John F. McGeorge, - - -	25
Dr. Nelson, - - - - -	20
Col. B. F. Dabney, - - -	10
Dr. Corbin Braxton, - - -	600
Wilson C. Pemberton, - -	50
	9370

Above you will see, by an extract of Mr. Hardin B. Littlepage, from the books of Mr. George N. Powell, who was the census taker for this county, that the number of persons who had marled land up to June 1840, were 76; and the number, of acres marled were 7800. In addition to these, there were 13 farmers who were not requested by Mr. Powell to state how much land was marled, the extent of whose marling was 1570 acres; making in the aggregate 89 persons who had used marl up to 1840, and the extent of whose marling was 9370 acres. Since 1840 I suppose almost as much land has been marled as was marled prior to that time. I regret that Mr. Littlepage did not set down the names of the persons as I have done.

You can give in your own words the result of the above in the November Register. I requested Mr. Powell to take the census of the marled lands in the county, in consequence of your circucular, asking information on the subject.

WM. SPOTSWOOD FONTAINE.

ESTIMATE OF THE INCREASED VALUE OF PROPERTY IN KING WILLIAM COUNTY, CAUSED BY MARLING.

The foregoing article, even though incomplete and imperfect, is a valuable contribution to the agricultural statistics of Virginia. We have in vain endeavored to procure similar statements from other marling counties; and we trust that this communication (for which we are indebted to the public spirit of Messrs. Fontaine and Powell) will induce sundry others of our friends, in different counties, to follow the example thus furnished. If the legislature would require a list of marled and limed lands to be taken by the commissioners of the revenue next spring, when taking the lists of taxable property, such a statement would be full and correct, and it would show a general result of value already derived to Virginia from these sources very far exceeding what most persons would suppose.

Though the names of all the individuals who had applied marl were set down by Mr. Powell, the taker of the census, unluckily the clerk did not deem it necessary to copy them. This we very much regret. It would add much to the interest of such documents, and especially when they shall be read in future times, for them to show who were the persons who had made the earliest progress in marling, and also the lands on which they labored, as well as the extent of land thus improved. The latter is indeed by far the most important point—and that is doubtless correctly stated in the foregoing list. Upon these unquestionable data we shall construct and submit some calculations of profit and value.

Without taking into consideration any land marled since, it appears that there had been marled, at the close of 1840, in the small county of King William, 9370 acres. Let us endeavor to estimate, upon sure grounds, what is the consequent increase of net profit and of permanent value, to the proprietors of the land.

As the three-shift rotation is the most general, let us suppose it to be the one in practice on these marled lands; the course of crops being 1, corn, 2, wheat, (or oats,) 3, clover, or natural grass and weeds where the sowing of clover is neglected. For all details, I will adopt the general estimate given at page 120 of the new edition (now in the course of publication) of the 'Essay on Calcareous Manures,' the sheet containing which estimate will accompany this number, and to which the reader is referred for any particulars not here mentioned or made clear. Applying that general estimate to the marled lands of the county of King William, and assuming the *increased* net product of corn per acre to be 10 bushels, and of wheat, 5 bushels, then the statement of actual general increased profit, and value derived as early as 1841 will be as follows;

In corn, one third of 9370 acres, or 3123 acres, of which the *increased net product*, (caused by marling) is on an average 10 bushels per acre=31230 bushels, at 50 cents= - -	$15.615
One third, or 3123 acres, in wheat, yielding on the average of *increased net product* 5 bushels per acre=15615 bushels, at $1, (or if in oats, equal value)= - - - - -	$15.615
One third, 3123 acres, in clover or weeds, and counted as yielding no pecuniary value, - - - - -	00.
Total net annual profit from marling, then accruing, - - - -	$31.230

As this net annual increase will without question be permanent, (under the course of culture supposed) for all future time, this amount of clear profit may be assumed as certain for every year thereafter—without counting any thing for the still growing effects of the same marlings, or of the further extension of marling. And therefore, this sum of $31.230 is but the annual interest of the capital sum by which the property of the marlers of King William had been increased in 1840. The capital which would yield this interest, at 6 per cent., is $520,500; and, according to our grounds of estimate, that was the *increased* wealth then already produced. The extent of surface marled in 1840 will probably be tripled in ten years, and the increased net product of each acre, in some future time, made double what is stated above—so that it is not improbable that the increased value of capital, and of intrinsic value, supposed to be $520,500 for 1840, will hereafter grow to six times that amount, or more than $3,000,000.

But though the above *annual increased product* would be all *clear profit* on the cultivation, (of which all the increased expenses were supposed to be paid,) still when estimating the increased value of capital, the cost of the investment should be deducted. That cost is the expense of the marling. This varies with every operation; but it is probable that $4 the acre would be an ample allowance for the average cost of all the marling above stated. This, for 9370 acres, would be $37,480, which should be deducted from the newly created capital of $520,500, leaving of it $483,020 clear gain, in 1840.

If taking another view, the whole expense of marling will on the average be more than paid for by the net increase of crop made the first year of cultivation—leaving thenceforward all the newly created value of land so much of clear profit made by the marling.

These and all such estimates may be pronounced by most persons to be extravagant and incredible; but it will not be by those who have had most experience of the results of *judicious* marling. It is indeed assumed, in the foregoing estimate, that the marling was, and the subsequent culture is judiciously conducted. If otherwise, then so far the profit may be deficient, and the estimate will be erroneous. But the estimate was not designed for injudicious marling, nor for exhausting or destructive tillage. If all the farmers who have marled in King William have not fully realized the values estimated above, it is the fault of their management, and not of the marl, or of its proper use.

"AMENDE HONORABLE."

To the Editor of the Farmers' Register.

Big Lick, Roanoke, October 11, 1842.

In your September number, which has just reached me, I observed a letter from Mr. Turner, in which he declines a regular reply to my last piece, as presenting nothing to which he had not already replied, save a large infusion of "insulting epithets and coarse figures." I am free to confess that there is a good deal of truth in this censure, and I sincerely regret that I should have been driven by circumstances into a style of composition so opposed to my own taste, and so illy suited to an agricultural journal. Courtesy, kindness, and charity, should above all distinguish the discussions of farmers, between whom there can be no conflicting interests, and whose sole aim should be an increase of the general stock of knowledge and their mutual prosperity. All communications which violate these distinguishing characteristics are properly excluded from publication, but when from oversight or any other cause they are admitted, and the feelings of individuals thereby wounded, justice requires the privilege of a reply. Whether I have been "most sinned against or sinning," in this controversy, I am perfectly willing to leave to the decision of the public upon the essays as published.

Acting under the restriction which you imposed upon me, I have carefully avoided every thing offensive in this letter, which I desire you to publish as a sort of "*amende honorable*" to your numerous intelligent subscribers for the disrespect which I have shown them, in filling the valuable pages of the Register with the satirical badinage and coarse epithets of a heated personal controversy. Yours respectfully,

W. M. PEYTON.

ON THE CULTIVATION OF THE RASPBERRY.

By C. M. Hovey, esq., Editor of the Magazine of Horticulture.

In our last number we gave an article on the cultivation of the currant. It was the first of a series of papers we intend to offer upon the cultivation of all the fruits of the garden, which have not been previously written upon by ourselves. We now proceed to treat upon the growth of the raspberry.

The raspberry, like the strawberry and currant, and other small fruits, the gooseberry excepted, has been greatly neglected in its cultivation. Though common in every garden, and every where esteemed, next to the strawberry, for its rich and handsome fruit, yet few individuals have attempted improved methods of growth, by which the size, beauty, excellence, and productiveness of the berries may be increased to a much greater degree than they are generally seen in our gardens.

The raspberry is as susceptible of improvement as the strawberry: yet, while in the latter we have the beautiful Keen's seedling and our own variety, contrasting with such marked superiority over the small and inferior berries of the older sorts, the same varieties of the raspberry are now cultivated that were common twenty or thirty years ago, and they are still deemed the most desirable sorts. The same attention bestowed on this fruit, that has been devoted to the gooseberry, would undoubtedly have resulted in the production of varieties much superior to those at present grown.

The raspberry, like the strawberry, is a native of low and partially shady situations, growing in boggy or soft black soils, which allow its roots to strike deep, and throw up a free growth of its vigorous suckers. It is only in such situations, in their wild state, that the plants are found productive; on light and thin soils, and in high and exposed situations, the growth of the suckers is limited, and the fruit scarcely ever attains any size. Nature thus teaches the proper mode which the cultivator should adopt in the growth of the plants; and it should be his object to follow her, rather than to divert and thwart her in the course she has pointed out for us to pursue.

But how different is the cultivation of the raspberry from what we should infer from nature to be most conducive to its healthy growth. The plants are frequently set out in light and poor soils, crowded together, left untrimmed, choked up with a profuse growth of weak stems, and what little fruit they produce nearly dried up, from the arid situation in which they are placed. On the contrary, in cool, deep, and moist soils, in a sheltered and partially shaded place, the plants throw up suckers to the height of six or eight feet, and produce a profusion of large, handsome, and well flavored berries. So well assured are the most eminent English cultivators of the raspberry, of its love of a cool and moist soil, that some writers have strenuously recommended the use of bog earth and rotten leaves, in the place of the richest loam. We are well assured that the many complaints which are made of the meager produce of many raspberry plantations, may be attributed wholly to the light and droughty soils in which they are often planted.

We would not here omit to mention the pro-

duction of seedlings for the purpose of securing new sorts. By hybridization of the kinds, and by selecting the finest and largest fruit, from which to save the seeds, we are certain new and superior varieties can be raised.

To induce cultivators to give more attention to the raspberry, is the object of this article; and, to render our information the more useful, we shall treat of its growth under the following heads:—situation—soil—procuring plants—planting out—winter treatment—summer treatment—autumnal dressings—pruning—general remarks—and descriptions of the different varieties.

Situation.—A cool aspect is of material consequence; and to secure this, the north side of a fence or trellis, which will form a screen from the sun, is the most favorable; on the north side of a shrubbery, or row of fruit trees, is also a suitable place. If neither of these situations are to be had, an open spot in the garden may be chosen, always being careful to avoid the south or east side of a fence. A temporary shade may be effected in the open garden, by planting a row of running beans on the south side. Having selected a proper place, proceed to prepare the soil.

Soil.—A good soil is the most important requisite. Having marked out the size of the bed, if the earth is not naturally very rich and deep, preparations should be made to trench it. First cover the surface with three or four inches of bog earth, if to be procured, or, in its place, leaf soil, and if these are not conveniently to be had, good old rotten hot-bed manure, which has laid at least six or eight months: that from hot-beds made in April will do for use in the following October, and if a portion of the bed was leaves, it is so much the more to be preferred. Having spread the manure upon the surface, it should then be trenched in two spades deep, or about eighteen inches, placing the manure at the bottom of the trench. Level the surface, and spade in an inch or two more of the same kind of manure, and after allowing a week for the bed to settle, it will be ready for planting.

Procuring plants.—The success of planting out depends considerably upon a judicious selection of plants. Suckers of all sizes are generally thrown up, and many cultivators would naturally select the largest: such, however, are not the best; those of medium size, neither too large nor too small, have the finest roots, and spread more rapidly than the others. In selecting, reference should be had to the roots rather than the tops.

Planting out.—Having prepared the beds, and secured a sufficient number of plants, preparations may be made for setting out. A spade, a rake, and a garden hoe will be the proper implements to accomplish this. The bed being marked out, stretch the line across the bed, from east to west, at the distance of two feet from the walk: commence on either side of the line at one end, by taking out the earth the width and depth of the spade; place in the plant against the line, and throw the soil out of the second hole to fill up the first: in this way proceed until the whole bed is planted, treading the soil lightly around each plant; with the rake smooth and level the whole, and the work is finished. The rows should be three feet apart, and the plants three feet apart in the rows.

Winter treatment.—On the approach of cold weather it will be necessary to protect the plants for the winter. The best method of doing this is simply to bend the branches down to the ground, and cover them with four or five inches of the soil. Some cultivators use leaves, and others coarse manure, but we believe nothing answers better than the common soil in which they grow.

Summer treatment.—As soon as danger of cold weather is over, which is generally the first of April, the plants should be uncovered, and a stake placed to each, to which the stems should be securely tied: the first summer very little must be expected from the plantation, and only a few suckers will be thrown up from each plant; but by the second year they will be more numerous, and produce considerable fruit. As soon as the plants are tied up, proceed to level the ground, and give it a neat finish with the rake: the only after culture is to keep down the weeds, and the surface loose, by occasional hoeings.

Autumnal dressings.—Enriching the bed at the time of planting is not sufficient to keep the plants in good condition. The beds should have a dressing of two or three inches of compost every autumn. This should be laid on in October and lightly forked in, bearing in mind that a mixture of bog earth, or leaf soil and manure, is better for the plants than all manure. This will encourage the growth of the roots, and in the spring, the suckers which are thrown up to form the bearing plants of the next season, will be much stronger.

Pruning.—The raspberry can hardly be said to need pruning in the common acceptation of that term. All that is required is to shorten the most vigorous bearing stems, and to cut away the old wood after it has produced its fruit. The second summer after planting, the plants will throw up a quantity of suckers: if numerous and small, four or five of the best should be left their entire length; if large and strong, they should be shortened to four or five feet, and the superfluous ones rooted up, unless wanted to form new plantations.

General remarks.—As the raspberry is a rapid grower, after it once takes hold of the soil, quantities of suckers will spring up, which, in the course of four or five years, will weaken the plants. On this account new plantations should be made every fifth or sixth year, and the soil trenched and renewed by the application of the compost already mentioned.

The raspberry is rarely attacked by insects. We are not aware that we have ever been troubled with any during our cultivation of this fruit, for upward of 15 years. On this account, it requires very little care at the hands of the cultivator. As a market fruit it is particularly worthy of attention, requiring less care than the strawberry, easier picked, and the finer sorts commanding a good price.

The following is a list of the best kinds now cultivated. A few of them are new, and as yet, not very extensively known. The kinds we would recommend for a small collection are the white and red Antwerp, and the Franconia; for larger gardens, all the others may be added, which will afford a great variety, and a succession of fruit. The names, with the exception of the three last, are according to the London Horticultural Society's *catalogue.*

Descriptions of the different varieties.

Red Antwerp.—Of fine size, excellent flavor, and productive; one of the best.

Yellow Antwerp.—*Syn.* white Antwerp. Similar to the last, except in the color of the berries; a delicious fruit, but does not bear carriage well.

Barnet.—*Syn.* Cornwall's Prolific. A fine, large, red fruit, productive and excellent, but does not bear carriage well.

Common red.—*Syn.* Old red. The old kind of the garden. An indifferent bearer, and of inferior quality.

Double bearing.—*Syn.* Perpetual bearing. Said to be a good and productive kind, having the merit of producing one crop in July, and another in September.

Franconia.—*Syn.* Seedling Grape. One of the most productive and finest kinds cultivated around Boston. Fruit red, large, and handsome. The origin of this sort is unknown. It was originally received from Vilmorin, of Paris, by S. G. Perkins, esq., of Brookline.

New red Antwerp.—A notice of this will be found at page 256. It promises to be, so far as we have tried it, a very fine variety.

Cretan red.—A fine variety, the fruit large and handsome, rather more tart than the Antwerp, and continues in bearing a long time, which renders it highly valuable.

Besides the above eight sorts, the *new Turkish Turban*, *Victoria*, *Brentford*, *Spring Grove*, and the *Ohio Ever-bearing*, are recommended as very fine kinds. To those who have room, we would advise a trial of them.

SQUIRRELS AND A SIGN OF A HARD WINTER.

From the Buffalo Commercial Advertiser.

The Detroit Advertiser says a squirrel hunt took place near that city last Thursday. The total killed was 3360. Other papers notice like wholesale slaughters. The squirrels seem to abound this fall in unusual profusion all over the country. For some weeks past, the woods in the neighborhood of Fort Erie, across the river, have literally swarmed with them. Within the past week or two, they have crossed the Niagara to this side in immense numbers. The rapidity and width of the river, have proved fatal to many of them, but little armies of them have nevertheless succeeded in gaining our shores, whence they pushed off south. On the Alleghany river, we are told they are so numerous, that it is not deemed worth while to waste powder and shot in killing them. Those wishing a squarrel pie stand on the banks of the stream and knock the little "varmint" on the head with a stick, as they swim across. This apparent general emigration of the squirrels to the south, is held by the Indians, and others knowing in such matters, to betoken a hard winter.

INQUIRY CONCERNING HEMP.

A cultivator of drained swamp land, in Washington county, North Carolina, desires to know whether hemp would be a crop suitable for his situation, as to soil and climate. The land is such as was described in the 11th number of vol. vii. The soil is mostly of vegetable formation or material, rich as land can be, and generally well drained, but still sometimes subject to be injured by too much wet. Any reader of this work who can and will give information on this subject will confer a favor on our correspondent, and perhaps render service to many other persons similarly situated.—Ed. F. R.

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